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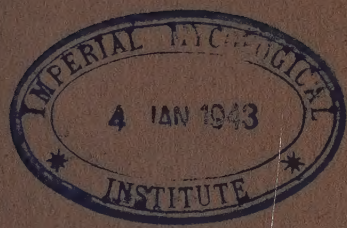

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Wight, A. E. See Mohler, J. R., jt. author, 7.
Wilkinson, P. B., 32.
Williams, R. B., & Daines, L. L., jt. author, 2.
Wise, B., & Craig, H. W., 9.
Wisnicky, W. See Morgan, B. B., jt. author, 12.
Wood, F. W. See Boynton, W. H., et al., jt. authors, 17, *bis*.
Woods, D. D., & Trim, A. R., 9.
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Zhalobovskii, I. L. See Pal'gov, A. A., jt. author, 2.
Zottner, G., 37.
Zumpe. See Totzek, et al., jt. authors, 35.

TECHNICAL REVIEWS

(1) **" Antibacterial Agents derived from Micro-Organisms."**

(2) **" The Present Position of Phenothiazine as an Anthelmintic."**

Reprints (price 1/- and 1/6 respectively) obtainable from :- Central Sales Branch (Imperial Agricultural Bureaux), Agricultural Research Building, Penglais, Aberystwyth.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin.*

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin.*

Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin.* Those of a sufficiently important nature, are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin.*

PLAN OF ARRANGEMENT OF ABSTRACTS IN THE VETERINARY BULLETIN

The following is a guide to the order and position of abstracts in the *Veterinary Bulletin*. It is necessarily limited to key words and frequently occurring items.

Abstracts are suitably numbered and cross-referenced by number among the eighteen different sections.

I. Diseases Caused by Bacteria and Fungi

AEROBES

- Cocci
  - Staphylococci
  - Streptococci
  - Mastitis (under appropriate causal agent)
  - Strangles
  - Micrococci
- Bacillus
  - Anthrax
- Mycobacteria
  - Tuberculosis
  - Johne's disease
- Corynebacteria
  - Caseous lymphadenitis
  - Ulcerative lymphangitis
- *Pfeifferella mallei* Infection (Glanders)
- *Erysipelothrix rhusiopathae* Infection (Swine Erysipelas)
- *Listerella*
- *Pasteurella*
  - Haemorrhagic septicaemia
- *Pseudomonas*
- *Haemophilus*
- Colon-Typhoid Group
- Salmonella Group
  - Infection in mammals
    - Abortion in mares
    - Abortion in ewes
    - Porcine enteritis
    - Other examples
  - Infection in birds
    - Pullorum disease (B.W.D.)
    - Fowl typhoid
    - Other examples
  - Meat poisoning infections
- Brucella Group
  - *Br. abortus*
  - *Br. suis*
  - *Br. melitensis*

ANAEROBES

- Clostridium
  - Blackleg
  - Malignant oedema
  - Braxy, black disease
  - Enterotoxaemia, lamb dysentery, pulpy kidney disease, etc.
  - Tetanus
  - Botulism

VARIOUS OTHER UNCLASSIFIED MICRO-ORGANISMS

- *Bartonella*
- *Eperythrozoon*
- *Grahamella*

FUNGI

- Ringworm
- *Cryptococcus* Infection (Epizootic Lymphangitis)
- *Actinomyces*
- *Actinobacillus*
- *Botriomyces*
- *Fusiformis*

PLEURO-PNEUMONIA GROUP

- Bovine Contagious Pleuro-Pneumonia

AGALACTIA GROUP

- Contagious Agalactia of Goats and Sheep

BACTERIAL FLORA OF ANIMAL TISSUES

METABOLISM AND NUTRITION OF MICRO-ORGANISMS

II. Diseases Caused by Protozoan Parasites

- Amoebiasis
- Trypanosomiasis
- Leishmaniasis
- Trichomoniasis
- Blackhead of Turkeys (Enterohepatitis)
- Infectious Enteritis of Turkeys
- Coccidiosis
- Malaria
- Toxoplasmosis
- Anaplasmosis
- Piroplasmosis
- Spirochaetosis
- Leptospirosis

III. Diseases Caused by Viruses and Rickettsia

- Virus Infections not Limited to Single Animal Genera
  - Foot and mouth disease
  - Aujeszky's disease
  - Rabies
  - Pox diseases
  - Influenza group
- Virus Diseases of Equines
  - Respiratory infections
  - Equine infectious anaemia
  - Equine encephalomyelitis
  - African horse sickness
- Virus Diseases of Cattle
  - Rinderpest
  - Bovine malignant catarrh
- Virus Diseases of Sheep and Goats
  - Bluetongue
  - Contagious ecthyma
  - Louping ill
- Virus Diseases of Swine
  - Swine fever
  - Porcine encephalomyelitis
  - Vesicular exanthema
- Virus Diseases of Carnivora
  - Of dogs
  - Of cats
  - Of foxes
  - Of other carnivora
- Virus Diseases of Rodents
- Virus Diseases of Birds
  - Fowl plague
  - Newcastle disease
  - Respiratory infections
  - Psittacosis
- Virus Diseases of Man
- Rickettsial Infections
  - Heartwater of sheep
  - Rickettsial conjunctivitis

IV. **Immunity**

Allergy
Anaphylaxis
Sensitization
Serology
Antigens and Toxins
Antibodies and Antitoxins
Tissue Invasiveness (Permeability)
Blood Groups
Various

V. **Parasites in Relation to Disease [General]**

VI. **Parasites in Relation to Disease [Arthropods]**

Lice
Fleas
Dipterous Flies
  Blowflies and fleshflies
  Oestrids (warbleflies and botflies)
  Biting muscids (*Stomoxys*, *Lyperosia*, *Glossina*)
  Tabanids
  Midges
  Mosquitoes
  Sheep ked
Pentastomes
  Linguatula
Ticks
Mites

VII. **Parasites in Relation to Disease [Helminths]**

TREMATODES

CESTODES

Taenia
  Cysticercosis
  Echinococcosis

NEMATODES

Strongyloides
Trichurids
  Trichinosis
Strongyles
  Sclerostomes
  Hookworms
  Parasitic gastro-enteritis
  Lungworms
  Poultry gapeworm
Oxyurids
Ascarids
Spirurids
Filariae
Acanthocephala

VIII. **Spontaneous and Transmissible Neoplasms and Leucaemias [Including Fowl Paralysis]**

IX. **Diseases, General**

General and Collective
Haematology
Special Animal Pathology—Unclassified Diseases of Particular Animals (Horse, Ox, Sheep, Goat, Pig, Dog, Cat, Rodent, Bird, Various)
Special Regional Pathology—Unclassified Diseases of Particular Body Organs (Digestive, Respiratory, Nervous, Circulatory, Skeletal, Urino-Genital, Endocrine Systems etc.)
Inherited Diseases and Lethal Factors
Teratology

X. **Nutritional and Metabolic Disorders**

General Nutrition
Carbohydrates, Fats, Proteins, Amino Acids, etc.
Minerals
Osteodystrophia and Rickets
Vitamins (A, D, E, K, B_1, B_2, Nicotinic Acid, B_6, Pantothenic Acid, Other Factors of the B_2 Complex, C, Other Vitamins)
Metabolic Disorders

XI. **Physiology and Anatomy**

General
Normal Haematology
Regional Physiology (Digestive, Respiratory, Nervous, Circulatory, Skeletal, Urino-Genital including Breeding and Artificial Insemination, and Endocrine Systems)
Various
Anatomy

XII. **Poisons and Poisoning**

Inorganic
Organic and Alkaloid
Plant Poisons
Venoms
Poisoning by Therapeutic Agents
Miscellaneous, including War Gases

XIII. **Therapeutics and Disinfection**

General Chemotherapy and Pharmacology
Treatment of Bacterial and Fungous Diseases
Treatment of Protozoan Diseases
Insecticides and Repellents
Anthelmintics
Treatment of Unclassified Diseases
Hormone Therapy
Wound Treatment
Disinfectants and Antiseptics

XIV. **Hygiene and Public Health**

Milk Hygiene
Meat Hygiene
Food Poisoning
Rodent Control
Various

XV. **Technique and Apparatus**

Bacteriological
Parasitological
Microscopy and Optics
Histological
Laboratory, Various
Zootechny
Various

XVI. **Miscellaneous**

XVII. **Reports** (of State and Local Government Departments and of Institutes, Schools, and Other Corporate Bodies dealing with General Subjects)

XVIII. **Book Reviews**

IMPERIAL BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

Vol. 13.] January, 1943. [No. 1.

DISEASES CAUSED BY BACTERIA AND FUNGI

O'DROMA, L. (1942). **Studies in Mastitis in Irish Dairy Herds.**—*J. Dep. Agric. Eire.* **39.** 100–108. **1†**

This paper is an abridged version of part of a degree thesis; it is divided under three main headings.

(a) The incidence of streptococcal mastitis in Irish dairy herds. Twenty-five infected herds were investigated in one district, said to be representative of southern Ireland and from these, 29·4% of cows were affected with streptococcal mastitis in one or more quarters of the udder. The highest reactor rate was in cows 6–12 years old, and *Str. agalactiae* was responsible for 95%.

(b) Mastitis streptococci, their occurrence and significance in herd composite milk. *Str. agalactiae* was found in 12 out of a total of 52 bulk samples of milk. It is here pointed out, however, that the organism content of a bulk sample may not be a reliable guide to the amount of infection present in the herd, because of such factors as the dilution of infected with non-infected milk and the "crowding out" of mastitis streptococci by more rapidly growing organisms.

(c) Characteristics of mastitis streptococci. Strains of *Str. agalactiae* isolated by the author were mostly β-haemolytic.—J. C. BUXTON.

*LOURENS, L., & VAN DER SCHEER, A. (1941). Over het verloop en de genezingskansen van de mastitis door Streptococcus dysgalactiae en Streptococcus pyogenes. [**Course and Prognosis of Mastitis caused by *Streptococcus dysgalactiae* and *Str. pyogenes***].—*Tijdschr. Diergeneesk.* **68.** 283–297. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **140.** 368]. **2**

Mastitis caused by *Str. dysgalactiae* is acute in development. If the udder is milked clean, preferably in combination with an autovaccine treatment, a cure is almost always effected unless other infection is also present.

Mastitis due to *Str. pyogenes* is acute in only half the cases; in the other half it is chronic without any acute primary symptoms. The affected quarters must always be considered as lost. This infection may easily be spread to unaffected quarters.

HENDRY, J. L. (1942). **A Study of Hemolytic Streptococci from a Horse Treated with Sulfanilamide after Streptococcal Bacteriemia Developed during Immunization.**—*J. infect. Dis.* **70.** 112–118. **3**

Infection with haemolytic streptococci was established in a horse by means of four injections with live culture given over a period of 2½ months, and treatment consisted in the oral administration of 250–300 grains of sulphanilamide twice daily for the first seven days; from the eighth day until death on the 11th day, the doses of sulphanilamide were increased to 900 grains given as 3–4 doses daily. Haemolytic streptococci were not present in the blood on the first day after treatment, but were demonstrated daily thereafter. Streptococci were isolated from the blood on the day before death and from the spleen and one heart valve after death. Organisms from the blood were found to be more resistant to sulphanilamide than was the standard culture used for immunization and while those obtained from the heart valve showed slightly less resistance, streptococci from the spleen were markedly susceptible to the action of the drug. It is suggested that the spleen may contain a substance inhibitory to the action of sulphanilamide.

—J. C. BUXTON.

See also absts. **194†**, **229**.

ROTHBARD, S., & ANGEVINE, D. M. (1942). **Chronic Choroiditis Produced with Streptococcus viridans and Streptococcus haemolyticus in Normal and in Immunized Rabbits.**—*J. infect. Dis.* **70.** 201–207. **4**

Chronic choroiditis was produced in 26 out of 39 normal rabbits which received multiple intravenous injections of 4 ml. of 18-hour whole broth culture of *Str. viridans*. No ocular lesions were produced by single injections of live culture, or by repeated injections of killed culture, filtrates, or the carbohydrate or nucleoprotein fractions of the streptococci. All rabbits given repeated courses of daily intravenous injections of 1–2 ml. of broth culture, alternated with periods of rest, developed chronic choroiditis. Seven out of 11 previously immunized rabbits developed lesions after intravenous injections of culture, while four non-immunized animals remained unaffected.

In similar experiments with *Str. haemolyticus*, it was found that intravenous or intracutaneous immunization increased the susceptibility of the rabbits to the development of chronic inflammation of the choroid by artificial infection.

The lesions were in general bilateral, and focal, but sometimes diffuse. It is probable that the foci were the result of embolisms, because streptococci were found in the small vessels of the choroid in some cases. Fibrous adhesions between the choroid and retina were occasionally found, with involvement of all layers of the retina in the inflammatory process.—I. W. BURTON.

NOTE:—In certain cases it is not possible to check references in the original publication. Such references are marked with an asterisk.
† Abstracts will be numbered serially throughout volume **13** of the *Veterinary Bulletin*, the numbers being printed in black type at the end of each title. These numbers will be used in giving cross references to abstracts which might equally well appear in more than one section of the journal, *e.g.* abst. **3** has been placed in the section "Diseases Caused by Bacteria and Fungi", and a cross reference to it appears in the section "Therapeutics and Disinfection" after abst. **194**, which also refers to the action of sulphonamides in streptococcal infections.

NIVEN, C. F., Jr., SMILEY, K. L., & SHERMAN, J. M. (1942). **The Hydrolysis of Arginine by Streptococci.**—*J. Bact.* **43.** 651–660. **5**

The fraction of peptone broth from which the majority of the species of streptococci are able to produce NH_3 appears to be the amino-acid arginine. The outstanding exceptions to this capacity of hydrolysing arginine are amongst the closely related non-haemolytic strains, loosely classified as the "viridans streptococci". This ability to hydrolyse arginine is possessed by both haemolytic and non-haemolytic strains and varieties of the Lancefield groups A to G, and amongst the lactic group by *Str. lactis*, but poorly so or not at all by *Str. cremoris*. A suggestion is made of an arginine medium for use in a differential test which appears to be of definite value for certain purposes. The incorporation of glucose in the medium increased slightly the total amount of NH_3 produced. The optimum pH for arginine hydrolysis by *Str. faecalis* was 6·5, but the range at which this property is exhibited was wide. No streptococcus was able to produce NH_3 from related compounds such as urea, guanidine and creatinine. The suggestion by HILLS (1940) of the term "arginine dihydrolase" for the enzyme of streptococcus seems to be very appropriate. —ALFRED EDEN.

HERBERT, D., & TODD, E. W. (1941). **Purification and Properties of a Haemolysin Produced by Group A Haemolytic Streptococci (Streptolysin O).**—*Biochem. J.* **35.** 1124–1139. **6**

Streptolysin O was isolated in an almost completely pure state from filtrates of broth cultures of group A streptococci, the haemolytic activity of which was estimated by an accurate colorimetric method, by fractionation with $(NH_4)_2SO_4$ and adsorption and elution from calcium phosphate gel, followed by adsorption and elution from alumina Cγ. A description is given of the results of chemical analysis, the physical properties of the haemolysin, its activation by various reducing agents and of the effect of pH and temperature on its haemolytic activity. The adsorption of streptolysin O on the red cell surface and the effect of varying red cell concentration were studied, together with the effect of various substances, including sulphanilamide, calcium, iodoacetic acid and iodoacetamide. Neutralization tests were made with streptolysin O and the homologous antibody and a comparison was made in mice of its lethal effects in the unactivated and activated states.—R. O. MUIR.

See also abst. **248.**

WILLIAMS, R. B., & DAINES, L. L. (1942). **The Relationship of Infectious Omphalitis of Poults and Impetigo Staphylogenes in Man.**—*J. Amer. vet. med. Ass.* **101.** 26–28. **7**

An account is given of an inquiry which was carried out by the authors into the deaths of 20–30% of the turkey poults at a large hatchery within 72 hours of the egg shells being "pipped" by the young birds.

The hatchery consisted of one large unit, holding approximately 43,000 eggs, which was maintained at the correct temperature and humidity throughout by means of an upward forced draught and inside which the attendants worked. Poults which exhibited omphalitis showed a small scab in the region of the navel, the removal of which left an ulcer-like area discharging a blood-stained exudate from which *Staphylococcus aureus* was recovered in every case. Upon investigation the atmosphere of the incubator was found to be heavily charged with these organisms and the authors suggest that infection was introduced by one of the attendants who was at the time suffering from a skin affection from which *Staph. aureus* was isolated, and that the organisms were carried to the navels of the young birds by the upward draught in a suitable temperature and humidity for their survival.—J. C. BUXTON.

PAL'GOV, A. A., & ZHALOBOVSKIĬ, I. L. (1940). Diplokokkovaya pneymoniya zherebyat-sosunov. **[Diplococcus Pneumonia in Unweaned Foals].**—*Sovyet. Vet.* No. 11/12. pp. 5–8. **8**

Enzootic purulent broncho-pneumonia was observed during 1936–39 in a Kazakhstan stud, during which 13–76% of all foals were affected, the mortality being 5–21%. A diplococcus similar to the pneumococcus was isolated in all cases from nasal discharge, parenchymatous organs, lymph nodes, and heart blood.

The clinical picture and the lesions found P.M. were similar to those described by RESHETNYAK [*V. B.* **12.** 366.] who isolated *Corynebacterium equi* and by PODDUBSKIĬ [(1938)—original not available in United Kingdom] who isolated *Streptococcus pyogenes*. The authors presume that the diplococci, corynebacteria, and streptococci were merely secondary invaders and that the causal agent was a filtrable virus.

It is stated that satisfactory results were obtained by combined intravenous treatment with 33% alcohol and novarsenol.—A. MOLDAWSKY.

See also abst. **93.**

CHRISTENSON, I. (1942). Om mjältbrand. En epizootologisk-klinisk studie. **[Anthrax. An Epizoological and Clinical Study].**—*Skand. VetTidskr.* **32.** 225–256. [English summary]. **9**

C. uses official veterinary reports, technical publications, and his own clinical data in the discussion of the problem of anthrax amongst domestic animals in Sweden, Norway, and Denmark. In reading official statistics it must be remembered that laboratory control of the field diagnosis was instituted in Norway in 1912 and in Denmark in 1920. Prior to these dates PLUM estimates there was an error of 2% in diagnosis. In this article the following salient facts emerge.

The incidence of anthrax varies directly with the quantity of oil cake imported as fodder from certain countries. Thus in the blockade years of the last war, the incidence reached a low level. There is no explanation for the variation in virulence of the outbreaks or the occasional occurrence of unusually large numbers of cases as in the so-called "anthrax-years" of 1905 and 1911. In a quarter of the outbreaks that occur in Denmark and less frequently in Sweden, secondary outbreaks develop, usually appearing 2–5 days after the primary case. From 1914–37 in Sweden the relative incidence in the horse, ox, sheep, and pig was as 4 : 50 : 1 : 1. In Denmark the proportion was 1 horse to 120 cattle to 1 pig. In Denmark only three cases have occurred in sheep in 31 years. The death rate is not known in Sweden, but PLUM gives it in Denmark as horses 91·4%, cattle 74·3%, sheep 78%, pigs 45·9%, and dogs 54%. The disease is most common in the winter in Denmark and Norway but in the summer in Sweden. C. postulates that this is due to heavier pasture infection in Sweden.

The 58 horses that died in the epizootic in Norway in 1937 exhibited a wide variety of symptoms, none of which was characteristic. In the several serious outbreaks involving cattle the signs of illness, apart from a constant high temperature, differed widely and included diarrhoea, oedema of the neck and brisket, and stomatitis. The stomatitis was reminiscent of foot and mouth disease. In pigs swelling of the throat was not constant. Serious outbreaks were always associated with the contamination of the surroundings by blood of an affected animal, the precautions required for dealing with animals suspected to have died from anthrax not

having been taken. A further cause of spread is by dissemination of infective animal products such as by the sale of the hide for shoe leather or the use of the carcass as food for foxes or pigs. In the Norwegian epizootic referred to above, flies of various types were trapped on an anthrax carcass and were found to be contaminated by virulent bacilli. Not until domestic animals were withdrawn from the pastures was this outbreak brought under control [blood-sucking flies are especially active in the Baltic countries in summer].

Treatment was usually applied in herds in which secondary outbreaks were occurring or expected. It included recording of temperatures as often as possible during the day and early prophylactic administration of serum. With a rise of temperature the patient was isolated in the coldest possible atmosphere and given cold water douches, together with massive doses of serum intravenously and subcutaneously (150 ml. and over), and camphor and anti-febrin therapy. C. records good results but stresses the importance of the so-called "cold treatment". If treatment was successful, recovery ensued in about one week. Serum was used prophylactically only in the case of cattle using the same fodder box as the primarily affected animal. [The different construction of byres in the United Kingdom would not allow of this discrimination.] In any serious epidemic, vaccine-serum immunization is recommended.
—G. B. Brook.

Startsev, I. S. (1941). Opyt primeneniya pervoĭ vaktsiny Tsenkovskogo v smesi s stimuliruyushchimi veshchestvami. **[Trials of Tsenkovskii's Anthrax Vaccine I Mixed with Alum and Agar].**—*Veterinariya, Moscow.* No. 2. pp. 24–25. [French summary]. **10**

S. reports results of preventive vaccination of several hundred horses and oxen during an outbreak of anthrax with Tsenkovskii's vaccine in which alum agar was incorporated and also with the same vaccine in which agar alone had been incorporated. Six hours after subcutaneous inoculation of 5 ml., febrile and local reactions occurred.—A. Moldawsky.

See also abst. **246.**

Stang. (1942). Vererbung der Anfälligkeit für Tuberkulose. **[Inheritance of a Disposition for TB. in Animals].**—*Tierärztl. Rdsch.* **48.** 69–70. **11**

S. briefly discusses the factors, *viz*, environment, constitution, and individual disposition, that influence the development of TB. after infection, and then deals with the question of inheritance of predisposition towards TB. in cattle. Evidence indicating hereditary disposition to TB. in cattle is scarce. Hierholzer [*V. B.* **8.** 130.], however, claimed to have found TB. to be specially prevalent in the progeny of five bulls. S. concludes that it is extremely difficult to obtain significant evidence of disposition to TB. from a study of bovine families and warns against early hopes of progress in the problem.

*Christiansen, M. J., & Simonsen, A. (1941). Retirmaelk som Smittekilde. Erfaringer fra den praktiske Bekaempelse af Husdyrtuberkulosen. **[The Spread of Tuberculosis by Milk Returned to Farmers from Dairies].**—*Maanedsskr. Dyrlaeg.* **53.** 345. [Abst. from abst. in *Skand. VetTidskr.* **32.** 49–52]. **12**

The law requiring the pasteurization of milk products, intended for animal consumption, by dairies, is 50 years old and instances of defective treatment are rare. If reactions to mammalian tuberculin occur in young stock which are negative to the test with avian tuberculin, infection resulting from such returned milk should be suspected. In such cases lesions are to be found in the lymph nodes of the throat, neck, and mesentery (primary complex), but aspiration may set up disease in the lungs and their lymph nodes. The authors describe pasteurization by the plate method by which the temperature of the fluids is raised to 90° C.; the heat of the pasteurized product leaving the apparatus is used to raise the temperature of the incoming fluids. Defects in the apparatus may permit the escape of incompletely pasteurized material into the treated product which may then be infective for animals, and outbreaks of TB. in calves and swine attributable to such defects are reviewed. Milk for cheese manufacture cannot be heat-treated, so that the risk of infection of returned milk by contaminated vessels is greater at cheese factories.—G. B. Brook.

See also absts. **144, 230.**

Verge, J., & Senthille, F. (1942). Fréquence des divers types du bacille de Koch dans la tuberculose du cheval. **[The Frequency of the Occurrence of Different Types of Tubercle Bacilli in Horses].**—*C. R. Soc. Biol. Paris.* **136.** 353–354. **13**

Equine TB. is apparently rare in France, only about one animal in 10,000 being condemned at the abattoirs because of visible signs of TB. A review of 112 cases indicated the relative frequency of types and routes of infection as follows:—80% bovine, the majority of alimentary origin; 10% avian, the majority of alimentary origin, and 10% human, the majority of respiratory origin.—J. Lochiel McGirr.

Clark, C. H. (1942). **A Plan to Combat Avian Tuberculosis Infection as Followed in Michigan.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 121–126. **14**

The greatest incidence of avian TB. in the U.S.A. is found in the north central section or Corn Belt. In some parts of this area 85% of flocks are infected. In Michigan a plan to control and eradicate the disease is in operation. All hatcheries which participate are required to sign an undertaking to use only eggs from hens which have passed pullorum and tuberculin tests during the quarter of the year preceding the hatchery season. All birds entering hatchery flocks must also be submitted to these tests. At the option of the owner the tuberculin test is also applied to breeding swine. Participation in the scheme is voluntary and all veterinarians involved receive initial training from the state. Special equipment for the rapid whole-blood pullorum test and the tuberculin test is provided. This includes a table [not described] upon which eight birds can be restrained at one time. With this table and two assistants, the tests can be applied to as many as 240 birds per hour. Over a period an average of 150–180 birds per hour can easily be maintained. The plan is now in operation in 30 hatcheries and has so far proved satisfactory.—D. D. Ogilvie.

Pallaske, G. (1942). Ueber Hauttuberkulose beim Huhn. **[Skin Tuberculosis in Fowls].**—*Dtsch. tierärztl. Wschr.* **50.** 101–104. **15**

The liver and spleen and a piece of skin were examined of a hen from a poultry farm where a large proportion of the flock was infected with avian TB. The liver and spleen were normal.

The affected skin was nodular and covered with crusts; the underlying layers were discoloured and there was a thin layer of pus; the feathers were lost. The cutis and subcutis were thickened up to ten times the normal. Sharply defined foci could not be discerned. Acid-fast bacilli resembling avian tubercle bacilli were present.

The histology of sections is described.—Tj. Bakker.

BRETEY, J. (1942). Prémunition antituberculeuse et carence en vitamine C. **[BCG Vaccination and Vitamin C Deficiency]**.—*C. R. Soc. Biol. Paris.* **136.** 327–328. **16**

A vitamin C deficient diet in g. pigs considerably depressed natural nonspecific resistance, while artificial immunity, produced prior to the deficient régime by BCG vaccination, was not affected. On the other hand, vaccination of animals on the 15th day of a 45-day deficient period produced only a feeble degree of immunity. Thus while vitamin C was not apparently necessary for the maintenance of artificially produced immunity, it was required for the initial development of such immunity.—J. LOCHIEL MCGIRR.

BAKER, J. A., & HAGAN, W. A. (1942). **Tuberculosis of the Mexican Platyfish (Platypoecilus maculatus).** —*J. infect. Dis.* **70.** 248–252. **17**

A study was made of a naturally occurring outbreak of TB. in tropical platyfish which the authors claim was caused by a hitherto unknown strain of a type that occurs in cold-blooded animals, named by them *Mycobacterium platypoecilus.* A table is given showing the pathogenicity of the organism in platyfish and goldfish with cultures given orally and intraperitoneally.

—J. C. BUXTON.

*KJELDBJERG, J. (1942). Tuberkulinreaktionen og Dobbeltinfektioner. **[Tuberculin Test Reactions and Mixed Type TB. Infections in Cattle]**.—*Maanedsskr. Dyrlaeg.* **53.** 489. [Abst. from abst. in *Skand. VetTidskr.* **32.** 375 and 377]. **18**

The results are described of tuberculin tests applied to cattle affected with bovine or avian type TB. The presence of avian type infection was diagnosed in cattle on 150 farms. 250 cattle were reactors to avian type tuberculin and were retained in the herds on the results of re-tests and comparative tests. Nevertheless K. remains apprehensive of cases in which both bovine and avian type infections may co-exist.

[The majority of intradermal tuberculin tests in Denmark are carried out with one injection only.]

—G. B. BROOK.

FURCOLOW, M. L., HEWELL, B., NELSON, W. E., & PALMER, C. E. (1941). **Quantitative Studies of the Tuberculin Reaction. I. Titration of Tuberculin Sensitivity and its Relation to Tuberculous Infection.** —*Publ. Hlth Rep., Wash.* **56.** 1082–1100. **19**

Members of several different American population groups were tested by means of a graduated series of increasing concentrations of tuberculin prepared from a stock solution of a standard P.P.D. preparation, in conjunction with clinical and X-ray examinations. "Sensitivity curves" obtained by plotting the percentage of positive reactors to the intradermal test against the tuberculin dosage employed indicated that, in the main, those who reacted to small doses of tuberculin were either showing evidence of clinical TB., or had a history of contact with the disease. On the other hand, large doses of tuberculin produced positive reactions in practically every individual tested, a result the significance of which was difficult to assess, the authors favouring the idea that such reactions were nonspecific. In children who had received multiple injections of tuberculin but who reacted only to the larger doses, there was absolutely no evidence of sensitization.

—J. LOCHIEL MCGIRR.

STEENKEN, W., Jr. (1941). **The Isolation of Purified Protein Derivatives and Carbohydrates from Tuberculins and their Biological Properties.**—*J. biol. Chem.* **141.** 91–103. **20**

Ra (rough avirulent) and Rv (rough virulent) organisms, derived from the single parent strain H37, were grown for eight weeks on a modified Proskauer and Beck medium. After removal of the bacterial mass, the filtrate was heated for 1 hour at 55°C., then concentrated by ultrafiltration, and finally refiltered through Berkefeld candles. From this material, protein fractions were prepared by trichloracetic acid precipitation and carbohydrate fractions by alcohol precipitation of the neutralized trichloracetic acid supernate. The greater bacterial dry weight was produced by the Ra organisms, but larger protein and carbohydrate yields were obtained from the Rv filtrate, an anomaly apparently due to the greater susceptibility of Rv organisms to lysis.

G. pigs sensitized to both strains gave identical skin reactions with Ra and Rv protein fractions in doses of 0·027 mg., while 0·1 mg. doses of the carbohydrate fractions were required, and, even then, the carbohydrate skin reactions were atypical in that, while showing an area of necrosis, there was no surrounding erythema or induration.—J. LOCHIEL MCGIRR.

OZAWA, M. (1939). Über die experimentellen Untersuchungen der Allergie der Tuberkulose. **[Research on Tuberculous Allergy]**.—*Trans. Soc. path. japon.* **29.** 37–44. [In German]. **21**

A report of the experimental production in rabbits of a myocardial lesion resembling the specific nontuberculous granuloma reported by O. as being often found in the hearts of phthisical human beings. The rabbits received a primary injection of tubercle bacilli, and a secondary injection consisting of tubercle bacilli or various fractions or products thereof. Histological findings are given in detail, and it is thought that the lesion is an expression of allergy. The lesion bears only a superficial resemblance to the Aschoff's bodies of the human "rheumatic" heart, and doubt is thrown on the possibility that the human rheumatic syndrome may be of tuberculous origin.—E. COTCHIN.

SIMPO, K., & TAKEDA, K. (1939). Experimentelle Untersuchungen über die tuberkulöse Allergie der serösen Häute mit besonderer Berücksichtigung der Gelenkentzündung. **[Experiments on Tuberculous Allergy of the Serous Membranes with Special Reference to Inflammation of the Joints]**.—*Trans. Soc. path. japon.* **29.** 44–49. [In German]. **22**

An account of the joint lesions produced in rabbits, which had previously received an intravenous injection of living tubercle bacilli, by intra-articular injection of tubercle bacilli, old tuberculin, and bacillus-free extract of a tuberculous rabbit lung. An exudative arthritis followed in all cases, while in the case where tubercle bacilli were reinjected, tubercle formation in the joint, with minimal caseation or giant-cell formation, followed later. The exudative arthritis was thus considered to be an expression of allergy, and the tubercle formation an expression of immunity.—E. COTCHIN.

SCHAIN, P., & PETROFF, S. A. (1940). **The Inhibitory Action of Diphtheria Antitoxin on the Growth of the Tubercle Bacillus.**—*Quart. Bull. Sea View Hosp.* **5.** 432–440. [Abst. from abst. in *Amer. Rev. Tuberc.* **44.** No. 3. p. 97 of absts.] **23**

Treatment of g. pigs with *Corynebacterium diphtheriae* in combination with diphtheria antitoxin or toxoid prior to infection with *Mycobacterium tuberculosis* produced a retardation of the development of generalized TB. in these animals, the most favourable results being obtained by intracutaneous inoculation of live diphtheria bacilli combined with subcutaneous injection of 500 units of antitoxin. This retardation was only observed when treatment with diphtheria bacilli and antitoxin occurred prior to infection with *Mycobact. tuberculosis.*

—J. LOCHIEL MCGIRR.

LAPORTE, R. (1942). Caractères de l'autolyse des cultures de bacilles tuberculeux humains, bovins et aviaires. **[Autolysis of Cultures of Human, Bovine and Avian Tubercle Bacilli].**—*C. R. Soc. Biol. Paris.* **136.** 414–415. **24**

The autolytic degenerative changes occurring in old cultures of *Mycobacterium tuberculosis* are described as occurring in three stages :—(1) granular transformation of the bacilli, (2) liberation of these granules by dissolution of the ectoplasm, and (3) loss of acid-fastness and progressive fragmentation of the liberated granules. The non-acid-fast granules liberated at stage (2) had antigenic properties. A similar granular fragmentation was observed in cultures killed by toluene, chloroform, thymol or ether, but not in those fixed by formalin vapour or heat. The human type showed the described changes to a much greater degree than did either bovine or avian types, especially after repeated subculture, a phenomenon which appeared to be related to the progressive decline in virulence.—J. L. McG.

LAPORTE, R. (1942). Activité biologique des produits d'autolyse des bacilles paratuberculeux. **[Biological Activity of the Products of Autolysis of Paratubercle Bacilli].**—*C. R. Soc. Biol. Paris.* **136.** 358–359. **25**

From cultures grown on Sauton's medium, which had undergone slow autolysis as indicated by granular transformation of the organisms and loss of acid-fast character, the following fractions were prepared.

(1) A P.P.D. obtained by trichloracetic acid precipitation of the unheated culture filtrate. This fraction was an excellent antigen, produced specific antibodies on injection into g. pigs, fixed complement in the presence of tuberculous serum, was lethal by intravenous injection to tuberculous g. pigs, and gave a skin reaction in the tuberculous human being in doses equivalent to $1/20 \times 10^{-6}$ mg. protein.

(2) Proteose and polysaccharide fractions prepared from the trichloracetic acid filtrate from (1). These were biologically inactive.

(3) A granular, water-insoluble, non-acid-fast fraction prepared from the intact bacilli by grinding in distilled water. The granules of this fraction did not spin down even at high speed, and retained, though in diminished degree, the biological properties of the intact bacilli.—J. LOCHIEL MCGIRR.

VISHNEVSKIĬ, P. P., MAMATSEV, E. G., CHERNYSHEV, V. V., & CHERNYSHEV, N. S. (1940). Ustoĭchivost' paratuberkuleznykh batsill Ione. **[The Viability of the Bacillus of Johne's Disease].**—*Sovyet. Vet.* No. 11/12. pp. 89–93. **26**

It was found in laboratory experiments imitating natural conditions that *Mycobacterium johnei* remains viable in cattle manure and in the soil (black soil) for over 11 months, whereas in urine it becomes inactive after seven days. The bacilli in filter paper slips soaked in a concentrated emulsion containing 3 mg. bacilli per ml. saline, and an emulsion of bacilli preserved in sealed glass containers and exposed to direct and dispersed sunlight; remained viable up to ten months; culture suspended in saline remained active in 10–50% glycerin solution not less than ten months.

Bacilli in a 10–20% solution of chlorinated lime were destroyed in 10 min., in 5% formalin solution in 10 min., in 5% lysol in 5–10 min., in corrosive sublimate 1 : 500 in 10 min., in 5% creolin solution in two hours, and in 5% caustic soda or potash in 24 hours. Rivanol and potassium permanganate in concentrations of 1 : 125 – 1 : 2,000 proved ineffective. For practical purposes, disinfection with chlorinated lime is recommended.—A. MOLDAWSKY.

JOHNSON, H. W., & COX, B. F. (1942). **Studies on Johnin.**—*Amer. J. vet. Res.* **3.** 131–138. **27**

Rabbits and g. pigs could not be satisfactorily sensitized by either subcutaneous or intraperitoneal injections of *Mycobacterium johnei* suspended in mineral oil, though subcutaneous inoculations did produce an apparently short-lived sensitization in g. pigs. Chick embryos 5–10 days old, and day-old and month-old chicks also failed to give a standard uniform sensitization when inoculated with 0·01 g. of *Mycobact. johnei* suspended in mineral oil. On the other hand month-old chickens developed uniform lasting sensitization following intraperitoneal inoculation with 0·05 g. of the organisms in 0·5 g. mineral oil. On the basis of this result a method of testing johnin potency is suggested, chickens sensitized as above being used to determine the highest dilution of johnin which will elicit a satisfactory intradermal reaction.—J. LOCHIEL MCGIRR.

See also abst. **124.**

TRAUB, E. (1942). Ueber eine mit Listerelle-ähnlichen Bakterien vergesellschaftete Meningo-Encephalomyelitis der Kaninchen. **[Meningo-Encephalomyelitis of Rabbits Caused by *Listerella*-like Bacteria].**—*Zbl. Bakt. I. (Orig.).* **149.** 38–49. **28**

Approximately 3% of the Angora rabbits of a farm kept under excellent hygienic conditions were affected. Symptoms were twisting of the head to lie alongside the body, with loss of weight; there was no fever. The disease was subacute or chronic, usually affecting the younger animals. At P.M. examination nothing abnormal was seen by macroscopic examination, but sections of the brain showed extensive vascular and perivascular infiltration by monocytes or polymorphs, usually into the medulla oblongata alone and sometimes also into the cerebellum. Attempted passage by filtration was unsuccessful in two cases; bacteriological investigation resulted in the isolation of a species of *Listerella* from seven out of nine animals, the organism being found only in the brain.—J. G. CARR.

ISAEVA, A. F. (1941). Immunogennye svoĭstva pasterelleznogo toksina. **[Research on Formation of Toxins by the Pasteurella Group].**—*Veterinariya, Moscow.* No. 2. pp. 30–35. [French summary]. **29**

Thermolabile toxins obtained in filtrates by growing pasteurella upon meat peptone broth with the addition of 5% horse or rabbit serum, proved toxic after an incubation period even in very small doses for white mice, rabbits, and pigeons. The toxins stimulated the formation of antitoxins in rabbits, especially when inoculated together with virulent bacilli. By exposure to 0·2% formalin solution for 24 hours, the toxins were modified to anatoxin which possessed immunogenic properties.—A. MOLDAWSKY.

HJÄRRE, A., & WRAMBY, G. (1942). Om fibrinös serosa-ledinflammation (Glässer) hos svin. **[Fibrinous Inflammation of Serous and Joint Membranes in Swine].**—*Skand. VetTidskr.* **32.** 257–289. [English summary]. **30**

The disease under discussion was first described by GLÄSSER in 1906 and was known for many years as Glässer's disease. It is associated with diffuse serofibrinous inflammation of serous tissues (pleura, pericardium, peritoneum, or joint synoviae) and occurs in piglets, especially after long journeys. Failure has commonly attended attempts in the past to isolate a causal organism, but the authors have succeeded in doing so with the aid of special media as required by haemophilic bacteria, concluding that it is closely related to, or identical with, *Haemophilus influenzae suis.* They were able to reproduce the natural disease in

piglets by inoculating them at intervals during a long train journey, by the subdural, intraperitoneal, or intravenous routes. Fibrinous inflammation was set up in each case in the inoculated tissues. The disease has a close aetiological relationship to piglet influenza. In the latter, however, virus infection causes a primary lung disease, which is often succeeded by polyserositis.

—G. B. Brook.

Pearson, H. E. (1942). **Infection and Immunity in Mouse Catarrh.**—*J. Bact.* **43.** 229–235. **31**

The disease which P. studied is the highly fatal, infectious catarrh of mice characterized by rhinitis, otitis media, and pneumonia, originally described by Nelson [*V. B.* **7.** 519]. Small Gram-negative coccobacilliform bodies found in the nasal and middle ear exudates are considered to be the cause of the disease. Infection induced *via* the nasal route seems to be limited to the lungs and the middle ear, and the causal agent could not be recovered from the abdominal viscera. Following subcutaneous or intraperitoneal inoculation there is some transient lung involvement shown by characteristic rhonchi; such mice have some degree of immunity to intranasal inoculation about a fortnight later. After intraperitoneal inoculation the infectious agent could be recovered from the liver, spleen, and mesentery up to three weeks later. These mice did not develop neutralizing antibodies in their sera, as demonstrated by a test inoculation of the organism by the intranasal route.

The causal agent could be grown in chick embryo plus Tyrode's solution and also in chick embryo on a semi-solid medium. Regular passage on the chorio-allantoic membrane of chick embryos could not be achieved. No growth occurred on ordinary nutrient media.—D. L. Hughes.

Peluffo, C. A., Edwards, P. R., & Bruner, D. W. (1942). **A Group of Coliform Bacilli Serologically Related to the Genus Salmonella.**—*J. infect. Dis.* **70.** 185–192. **32**

There are several records in the literature of coliform organisms which have somatic antigens similar to those of the salmonella group. Accounts of coliform bacteria with flagellar antigens of the same nature as salmonella are less frequent and their antigens appear to be mostly those of the nonspecific phase of diphasic salmonella.

The organisms described by the authors possess antigens related to the monophasic types *S. cerro* and *S. dusseldorf*, with which they share the H antigen z_4. These organisms were slow lactose fermenters, some of the strains taking as long as 20–40 days to ferment this carbohydrate. All the organisms were isolated from pathological lesions and there was some evidence that they were aetiologically concerned with the disease process. Of the seven strains investigated, four also possessed the somatic antigen XXXIII, but the remaining three had somatic antigens not represented in the Kauffmann scheme. The occurrence of these organisms further emphasizes the need for a re-defining of the salmonella group, possibly solely along serological lines.

—D. L. Hughes.

Gallo, P. (1940). Las metasalmonelosis de las aves de corral en Venezuela. [**Pullorum Disease and Fowl Typhoid in Venezuela**].—*Rev. Med. vet. Parasit., Caracas.* **2.** No. 1/2. 49–70. **33**

In studying the salmonella of fowls, G. found the methods of identification of Pacheco & Rodriguez [*V. B.* **7.** 268, and **8.** 752.] and of Barboni [*V. B.* **9.** 524.] reliable. For the differentiation of *S. pullorum* and *S. gallinarum*, the use of bacteriophage gave the most accurate results.

Of the diagnostic methods, slow agglutination tests were the most accurate, although the rapid aggln. test was found practical for use in the field. Diagnosis by means of a "pullorin" was not sufficiently specific.

G. states that protein therapy, using ovalbumin, gave promising results in pullorum disease, but vaccines had no curative action. For immunization, a polyvalent preparation (*S. pullorum*, *S. gallinarum*, *Pasteurella aviseptica*, and *Bacterium coli*) proved most satisfactory.

—Miller Watson.

Hinshaw, W. R., Taylor, T. J., & McNeil, E. (1942). *Salmonella bredeney* **Infection in Birds.**—*Cornell Vet.* **32.** 337–339. **34**

The literature on *S. bredeney* infection in man, animals and birds is briefly reviewed, and the occurrence of the disease in California, in chickore partridges (*Caccabis chukar*), turkeys, and ducks is reported. The outbreak in chickores is described in some detail.

Seven hatches were affected involving a total of 1,061 chickore chicks, with a mortality of 511 (48·2%). Both *S. bredeney* and *S. typhi-murium* were isolated from affected chicks. The losses began when chicks were five days old and the outbreak lasted four weeks. The usual symptoms of acute infectious disease were observed, and the common autopsy lesions were ochre-coloured livers, sometimes showing areas of congestion or pinpoint areas of necrosis, congestion of the lungs, and enteritis.—R. F. Gordon.

Pallaske, F. (1941). Beitrag zur Aetiologie und Pathologie des Torticollis der Tauben. [**Torticollis in Pigeons**].—*Tierärztl. Rdsch.* **47.** 18–21. **35**

A case of *Salmonella typhi-murium* infection in a pigeon is described, in which there was a lesion of the cerebrum, this having caused an illness in which torticollis was the prominent symptom.—M. Landau.

Hegyeli, Z. (1940). Immunisierungsversuche mit der abgetöteten und lebenden Kultur des Bacterium suipestifer Kunzendorf. [**Immunization with Killed and Living** *Salmonella cholerae-suis* **var.** *kunzendorf*].—*Arch. viss. prakt. Tierheilk.* **76.** 133–138. **36**

Six pigs of 25–35 kg. body weight were twice inoculated subcutaneously with killed *S. cholerae-suis* vaccine with an interval of five days. Five days later these animals were fed living culture. Twenty-four hours after they had received the living culture, the pigs, together with six controls not immunized against *S. cholerae-suis*, were inoculated against swine fever (serum-virus vaccination). (Animals heavily infected with *S. cholerae-suis* may develop a fatal disease when immunized against swine fever by the serum-virus method.) All six non-immunized controls died while none of the immunized pigs became ill. The experiment was repeated with very similar results.

—D. L. Robarts.

McEwen, A. D. (1942). **Facts and Suppositions Relating to Vaccination against Contagious Abortion.**—*Vet. Rec.* **54.** 287–290. Discussion pp. 291–292. **37**

A review is given of information bearing on the epizoology of the disease. Figures from 441 herds show the progressive increase in the incidence of *Brucella abortus* infection in female cattle with increasing age. Whether abortion follows infection may depend on whether or not the animal is pregnant at the time when infection is acquired. Data regarding the influence of the size of the infecting dose on the outcome of infection in pregnant heifers is given, showing that a dose of more than $1{,}460 \times 10^4$ organisms is required to produce 100% infection in all the animals of a batch. When the

infective dose is small, agglutinins may take several months to develop. The apparent resistance of calves more than eight months old may often be due to the time which must elapse between exposure to infection and pregnancy. There is no reason to believe that the calf develops a better immunity than the older animal.

In assessing results of vaccination experiments, it must be borne in mind that natural exposure to sub-infective doses of the organism may produce natural immunity in a certain proportion of animals.

A satisfactory live vaccine should possess the following properties :—(1) it should confer a satisfactory immunity, (2) the characteristics of the bacilli should remain constant, (3) its virulence should be such that it does not infect the type of animal for which it is intended, and (4) it should not cause non-infected, non-reacting animals to react positively to the serum agglutination test. From the point of view of these criteria, the live vaccine previously issued by the Ministry of Agriculture and the vaccines it has issued since April 1942, prepared from strain 19, and from strain 45 (20), are discussed. It is concluded that the Ministry's old vaccine is unsatisfactory on account of the presence in it of fully virulent strains. Strain 19 vaccine used on calves appears to confer appreciable immunity at first calving, but it is doubtful whether the immunity persists. The strain also stimulates the production of agglutinins. Incomplete results of field tests on 88 herds vaccinated with 45 (20) are given which the author claims to be "not discouraging". In his opinion R strains of *Br. abortus* stimulate protective immunity as satisfactorily as S strains.

The author considered that, as long as inoculation is confined to non-pregnant cattle, the chances are slight that strain 45 (20) will become virulent. Two speakers stated that they had obtained good results with the Ministry's old vaccine.—R. S. DE ROPP.

SEELEMANN, M. (1941–42). Betrachtungen zur Frage der Bekämpfung der Abortus-Banginfektion des Rindes durch Impfungen und hygienische Massnahmen. Rückblick and Ausblick. I. Teil : Die Immunisierung mit virulenten (lebenden) Kulturen bei Färsen und Kühen. II. Teil : Ueber die mit der Verimpfung virulenter (lebender) Kulturen verbundenen Gefahren und Nachteile. III. Teil : Hygienische Massnahmen oder Immunisierung ? IV. Teil : Das Problem der Immunisierung von Kälbern und Jungtieren mit lebenden Kulturen. V. Teil : Die staatlicherseits aus den bisherigen Erfahrungen mit virulenten und avirulenten Kulturen gezogenen Schlussfolgerungen. [**Problem of Control of Bovine Brucellosis by Inoculation and Hygienic Measures. I. Immunization of Heifers and Cows with Live Virulent Cultures. II. Dangers and Disadvantages in the Inoculation of Live Cultures. III. Hygienic Measures or Immunization? IV. Immunization of Calves and Young Animals by Live Vaccine. V. Official Conclusions on Experiences with Virulent and Avirulent Cultures**].—*Tierärztl. Rdsch.* **47.** 474–477, 522–526 and 565–568 ; **48.** 4–9 and 57–60. **38**

These papers, which do not lend themselves to abstracting, are a review of the literature on the control of brucellosis by hygienic measures and live vaccines ; they contain no description of original work. It is mentioned that certain strains of *Br. abortus* capable of producing pathological changes in g. pigs, were incapable of causing lasting infection in cows.

In 1935–36, because of the danger that live vaccine might spread infection, laws were passed in Germany forbidding its use except for experimental purposes ; following the success of live vaccines in the field in other countries, however, the legislation was relaxed to some extent. Live vaccine was allowed to be used on severely infected premises in January of 1941 (severely infected premises being defined as those in which abortions had taken place in the previous six months and where 25% of cows were reactors to the agglutination test). Except in Schleswig-Holstein, however, the only live vaccine to be permitted so far is the avirulent bile-culture vaccine of DEMNITZ [*V. B.* **8.** 629.] and this only in nonpregnant animals. The official recommendations for the use of this vaccine are : for calves an injection at the age of 3–9 months followed by two injections at an interval of 1–3 months when they are 10–16 months old, and finally an injection given before service. Animals are therefore vaccinated four times before calving ; vaccination before service for each successive pregnancy is also recommended. No results of vaccination are given.—D. L. ROBARTS.

I. MOHLER, J. R., & WIGHT, A. E. (1942). **Report on Bovine Brucellosis Work, Including Calfhood Vaccination.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 80–86. **39**

II. —. (1942). **Report of the Committee on Bang's Disease (Brucellosis).**—*Ibid.* pp. 87–88. **40**

III. —. (1942). **Forum on Bang's Disease.**—*Ibid.* pp. 89–110. **41**

I. During the year ending June 30th, 1941, agglutination tests, including re-tests, for Bang's disease were applied to 7,737,300 cattle in 697,615 herds. There were 182,075 reactors (2·4%). A total of 446 counties in 23 states were classified as modified accredited Bang's disease-free areas. These counties contain approximately 4,000,000 cattle exclusive of steers and calves. On November 1st, 1941 there were 70,504 accredited herds containing 1,391,000 cattle in 43 states. In addition 14,732,000 cattle in 1,991,800 herds were under supervision and the owners of another 1,149,700 cattle have indicated that they wish to enter this category. Indemnities paid during the year comprised $2,450,000 by the Federal Government and $2,650,000 by the states.

A recent survey of dairy and breeding cattle of six months or over has shown the percentage incidence of brucellosis to be about 5%. A similar survey in 1934 indicated an incidence of 10%.

Plans have now been made to conduct calfhood vaccination in conjunction with other brucellosis eradication work in 39 states. Studies relative to strain 19 vaccination in calves have continued. From 1936 up to the present in 248 herds among cattle vaccinated as calves, 14,280 calvings have occurred. Of these, 8,284 were first calvings, 4,067 second, 1,537 third, 354 fourth, and 38 fifth. There were 13,804 normal calvings (96·7%) and 476 abortions (3·3%). Of the latter 178 were attributed to brucellosis (1·2%).

II. A further account of progress in similar terms.

III. A general discussion on Bang's disease resulted in the following conclusions.

The probable duration of satisfactory immunity in cattle vaccinated as calves is up to and including the third pregnancy.

Any change in the pathogenicity of strain 19 vaccine which may occur is towards a decrease in virulence. There is no danger to public health involved in its use.

The agglutination titre in vaccinated calves is not an index of the development of immunity.

Accidental inoculation of strain 19 vaccine into the hands of operators does not cause an attack of undulant fever.

Vaccination with strain 19 vaccine may cause

temporary diminution of milk yield. In one herd of 23 cows there was a reduction of 5% on the first day, and 6–7% on the second day. The milk supply returned to normal on the sixth day.

Limited experiments up to the present indicate that strain 19 vaccine protects adult cattle to at least as effective a degree as it does calves.—D. D. OGILVIE.

I. LOVE, E. L., & MINGLE, C. K. (1942). **Factors Affecting the Viability of Strain 19 Brucella Vaccine.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 65–72. **42**

II. RABSTEIN, M. M. (1942). **Bang's Vaccination—A Public Health Problem.**—*Ibid.* pp. 73–75. **43**

I. Experiments are described to determine the effect of pH, concentration of the bacilli, and excipients on the viability of strain 19 vaccine.

A close relationship between variations in pH and viability counts was established. pH values of 5·9–6·8 maintained a satisfactory viability throughout a period of nine months. The maximum count was obtained in a suspension buffered at 6·3.

Concentration of the bacilli exerted a less definite effect on the duration of viability. A range of 0·63–0·81% appeared satisfactory. This is somewhat higher than is now employed.

Bovine serum, glycerin, and glucose in concentrations of 5 and 10%, 5%, and 2% respectively gave less satisfactory results than the buffered 0·85% saline solution at present in use.

The marked influence of variations of temperature upon viability was apparent throughout the observations. The necessity for keeping the vaccine under refrigeration at all times is emphasized.

II. Tests of 668 quarter samples of milk from 167 cows vaccinated as calves with strain 19 vaccine showed that the organism does not become established in the udder and is not subsequently eliminated in the milk. In six cows of a group of 44, of which 22 were showing a positive blood test, brucella organisms were isolated from the milk. None of the organisms, however, resembled strain 19 either in cultural features or action on g. pigs. Five of the animals had shown a negative blood test over a period but had later become positive. They are considered to have been naturally infected after exposure to virulent brucella. The sixth animal had consistently shown a positive blood test since vaccination.—D. D. OGILVIE.

*MESSIERI, A. (1940). Sul potere abortigeno della "brucella abortus bovis" nella specie equina. **[Abortofacient power of *Br. abortus* for the Mare].**—*Boll. Sez. ital. Soc. int. Microbiol.* **12.** 168–172. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **140.** 350]. **44**

In a pregnant mare inoculated with *Br. abortus*, the organism did not spread to the uterus, placenta, or mammary glands and abortion did not occur. The organism was likewise absent from the stomach and intestines of the foal at birth, but the blood serum of the foal yielded a positive agglutination reaction.

ORLOV, E. S. (1941). V voprosu o samoizlechenii brutselleznykh ovets. **[Spontaneous Recovery of Sheep Infected with Brucella].**—*Veterinariya, Moscow.* No. 2. pp. 11–14. [French summary]. **45**

Prolonged observations were made on 51 brucella-infected sheep. Of ten sheep, which after 1–2 years ceased to give positive reactions to serum agglutination and complement-fixation tests and to allergic tests (with brucellysate), eight were found on P.M. examination to be completely free from infection, so that a spontaneous recovery was presumed to have occurred; the remaining two were found to be latent carriers. Fourteen sheep constantly excreted brucella in the milk; eight sheep were positive to serological tests during the period of observation; 19 gave inconstant reactions to serological and allergic tests, the reactions becoming negative and becoming positive again after 1–3 and sometimes after 4–10 months. The c.-f. test gave the most constant results and the aggln. the least constant. Reappearance of positive reactions may be due to the "flaring-up" of an old infection or to a fresh infection; reinfection appears to be the more probable explanation. Such sheep reacted first to the aggln. test, then to the c.-f. and allergic tests, and finally brucella appeared in the milk.

O. concludes that, although about 20% of sheep recover completely, this fact cannot be utilized in practice as at present there are no methods for differentiating between recovered sheep and latent carriers. All brucella-infected sheep should be eliminated.

—A. MOLDAWSKY.

SHUKH, N. V. (1940). Opredelenie zhiznesposobnosti mikrobov gruppy Brucella vo vneshnei srede v usloviyakh Sibiri. **[Determination of Viability of Brucella Organisms Outside the Body in Siberia].**—*Sovyet. Vet.* No. 11/12. pp. 18–19. **46**

Under natural conditions in the winter months of December, January, and February, the lowest temperature registered being –46°C., the bacilli remained alive in soil and ice for 3–4½ months and in hay chaff and manure for 4½–6½ months. In summer, with direct exposure to sunlight on soil and on the surface of faeces, the bacilli remained alive for 5–25 days.

According to S., the viability of freshly isolated strains, as shown by g. pig inoculation infectivity tests, did not differ from that of laboratory strains adapted to aerobic conditions.—A. MOLDAWSKY.

GUILFORD, H. M. (1942). **Undulant fever.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 76–79. **47**

Of 894 persons in Wisconsin affected with undulant fever, 813 consumed unpasteurized milk. Of these, 436 also had contact with farm animals. It is considered that at least 33% of the 436 derived their infection from milk. In all the remaining 377 individuals drinking raw milk but having no contact with farm animals, the infection is attributed to the milk. Only 75 cases of infection occurred in persons drinking pasteurized milk. Of these 49 had contact with farm animals, mostly as abattoir workers, and were all considered to have contracted the disease from animals. In the remaining 26 persons having no contact with farm animals, the origin of infection was obscure.

Infection was practically confined to adults, and throughout the series there was a sex ratio of infection of 2·4 males to one female.

It is concluded that between 60 and 70% of cases are derived from raw milk.—D. D. OGILVIE.

BESSONOV, D. K., & ORLOV, E. S. (1941). Neagglyutinogennyĭ abortin i skhema ozdorovleniya stad krupnogo rogatogo skota ot brutselleza. **[Non-Agglutinin-Producing Strain of *Br. abortus* and the Use of Abortin from this Strain for Intradermal Tests].**—*Veterinariya, Moscow.* No. 2. pp. 7–10. [French summary]. **48**

In the eradication of brucellosis, repeated combined sero-allergic testing is the most effective means of diagnosis. Until recently, repeated allergic testing with abortin was hindered by the fact that the standard abortin in some cases stimulated the appearance of agglutinins in the serum of healthy animals. The

authors performed laboratory and field experiments with a new abortin prepared from the non-sensitizing (non-agglutinogenic) strain B-9 isolated by FISHBEIN of the All-Union Institute for Experimental Veterinary Medicine, by repeated subcultivation on agar + bile medium. In ten rabbits which received 0·3 ml. of the new abortin intradermally and in six rabbits inoculated with 1 ml. subcutaneously, there was no appearance of agglutinins after 6, 12, and 23 days, whereas in six control rabbits which received standard abortin, the agglutination titre rose to 1 : 1,280 and 1 : 5,120. To compare the activity and specificity of the new abortin, 439 brucella-infected and 49 healthy cattle were tested simultaneously with both preparations. The results coincided in all but four animals, which gave doubrful reactions to the new abortin and positive reactions to standard abortin. The appearance of agglutinins in serum was not tested in cattle. It is considered that, as in rabbits, which form agglutinins readily, but do not do so when injected with this abortin, it will not stimulate the formation of agglutinins in healthy cattle.

The authors recommend the repetition of testing at monthly intervals, and not every six months as indicated by the instruction of the Soviet Ministry of Agriculture, until no new reactors to either test can be detected. A positive agglutination reaction, indicating a new infection, is regarded by the authors from the epizoological viewpoint as much more dangerous than a positive allergic reaction. It is recommended that positive reactors to the aggln. test should be eliminated at once, whereas reactors to the allergic test can be isolated and used for breeding purposes; they should be periodically tested by the aggln. test to detect any "flare-up" of infection.—A. MOLDAWSKY.

WEISS, J. (1941). Beitrag zur Verwendbarkeit der Meinicke-Sedimentier-(Kuppen-) Methode für die Bangdiagnostik. **[Value of Meinicke's Test for Diagnosis of Bovine Brucellosis].**—*Wien. tierärztl. Mschr.* **28.** 508–509. [Abst. only given]. **49**

A series of 1,237 blood samples from cattle was tested by the agglutination test and by the Meinicke flocculation test, both the sedimentation and centrifugation techniques being used [see *V. B.* **9.** 723]. Results obtained by the centrifugation technique agreed with results from the aggln. test in 70% of cases. Those obtained by the sedimentation method agreed in 65·2% of cases. The sedimentation technique gave the same result as the centrifugation technique in 78·8% positive and 77·6% negative cases.—R. S. DE ROPP.

WISE, B., & CRAIG, H. W. (1942). **The Brucella Complement Fixation Reaction.**—*J. infect. Dis.* **70.** 147–151. **50**

Experiments were carried out with a view to comparing the value of c.-f. and agglutination tests in the diagnosis of brucellosis. Antigen was destroyed by exposure to a temperature of 80°C. for 1 hour, with serum dilutions ranging from 1 : 2 to 1 : 64. Brucella complement-fixing antibodies were found to appear in the blood slightly earlier and to persist for a longer time than the agglutinins. Skin testing with brucellin, brucellergen and brucella polysaccharide gave rise to complement-fixing antibodies. It is concluded that the c.-f. reaction has no advantage over the aggln. test. The necessity is emphasized for a careful history of previous skin testing with brucella antigen before the interpretation of a positive test.—R. S. DE ROPP.

PRÉVOT, A. R., & TAFFANEL, J. (1942). Etude biochimique comparée de *Cl. septicum* et de *Cl. chauvoei*. **[Comparative Biochemical Study of *Clostridium septicum* and *Cl. chauvoei*].**—*C. R. Soc. Biol. Paris.* **136.** 415–416. **51**

Analysis of the culture filtrates derived from 15-day glucose-broth cultures of *Cl. chauvoei* and *Cl. septicum* indicated that the terminal pH of the medium, the utilization of glucose, the production of ammonia, and the elaboration of volatile acids were essentially the same for both organisms.—J. LOCHIEL MCGIRR.

WOODS, D. D., & TRIM, A. R. (1942). **Studies in the Metabolism of the Strict Anaerobes. 8. The Metabolism of Amino-acids by *Cl. welchii*.**—*Biochem. J.* **36.** 501–512. **52**

Washed suspensions of *Clostridium welchii*, strains S.R.9 and S.R.12, obtained from cultures grown on tryptic caseinogen digest (the medium considered most likely to give rise to production of optimal amounts of amino-acid deaminases) attacked only five of the 21 amino acids investigated. Serine, threonine, cysteine, and cystine were broken down with the formation of NH_3, CO_2 and, with the exception of cystine, H_2. A coenzyme-like factor not identical with any of the known coenzymes, was apparently involved in the process. Arginine was also decomposed but in rather a different manner: no H_2 was formed, the final yield of NH_3 and CO_2 varied with the age of the culture, and the coenzyme factor was not apparently necessary.—J. L. MCGIRR.

VAN HEYNINGEN, W. E. (1941). **The Biochemistry of the Gas Gangrene Toxins. 1. Estimation of the α Toxin of *Cl. welchii*, Type A. 2. Partial Purification of the Toxins of *Cl. welchii*, Type A. Separation of α and θ Toxins.**—*Biochem. J.* **35.** 1246–1256 and 1257–1269. **53**

I. Details are given of a method for the estimation of α-toxin in toxic filtrates of *Clostridium welchii* Type A, depending upon the reaction between the filtrates and egg-yolk solution; the resulting turbidity is nephelometrically determined. With certain modifications the method is applicable to the determination of combining power (test-dose). No consistent conditions were found for reliable standardization of antitoxin, but the results so far obtained are described and discussed.

II. The toxins of *Cl. welchii* Type A were concentrated and partially purified by adsorption and elution methods. Under suitable conditions θ toxin could be quantitatively adsorbed from a mixture of α and θ toxins. The α-toxin was found to be a "hot-cold" haemolysin, analogous to the staphylococcus β-haemolysin, in contrast to the θ toxin which is an ordinary "hot" haemolysin. The combined haemolytic activities of α and θ toxins are, however, not additive.—A. E.

GUILLAUMIE, M. (1942). Vitesse et intensité de l'immunisation des chevaux producteurs de sérum anti-*perfringens* ou anti-Vibrion septique. **[Speed and Intensity of Production of *Clostridium welchii* and *Cl. septicum* Antiserum in Horses].**—*C. R. Soc. Biol. Paris.* **136.** 73–77. **54**

A mixture of *Cl. welchii* toxin precipitated with ammonium sulphate and suspended in lanolin, and live bacilli was as good an antigen for the hyperimmunization of horses as was anatoxin. *Cl. septicum* anatoxin was of low antigenic value.—J. G. CARR.

GUILLAUMIE, M. (1942). Activité des sérums anti-*sporogenes*. **[Activity of *Clostridium sporogenes* Antiserum].**—*C. R. Soc. Biol. Paris.* **136.** 403–404. **55**

The anti-proteolytic titre of *Cl. sporogenes* antiserum, measured against equal amounts of several homologous culture filtrates, was found to vary with each filtrate. The time of incubation of the culture, and the presence of two proteins in varying proportions in the filtrate, had a marked effect on the titre.

The neutralization of the proteases of *Cl. sporogenes* culture filtrate by specific antisera did not conform to

the law of multiple proportions. It was found that a tenfold increase of filtrate required 2–4 times the expected amount of serum for neutralization.

The antiproteolytic values of three antisera were not reduced by 2 hours of heating at 56°C. The efficacy of one was reduced after 6 hours; a second was attenuated after 14 hours, while the third remained unchanged.

Some *Cl. sporogenes* sera with strong antiproteolytic properties had a slight neutralizing effect on the proteases of precipitated toxins of *Cl. welchii*, *Cl. histolyticum*, and *Cl. oedematiens*. Of nine sera tested, only a few were able to neutralize the toxins, when small amounts were used. When larger amounts were used, the majority diminished the proteolytic effect slightly, while the others caused no modification.

The proteolytic activity in all cases was measured by the amount of gelatin liquefied under stated conditions of time and temperature.—ISOBEL W. BURTON.

KAYUKOVA, N. I., & KREMER, T. A. (1940). Razvitie i toksinoobrazovanie Bac. botulinus v smeshannykh kul'turakh. **[Development and Toxin Formation of *Clostridium botulinum* in Mixed Cultures].**—*Mikrobiologiya, Moscow.* **9.** 585–594. [English summary]. **56**

Observations were made on toxin formation by mixed cultures of *Cl. botulinum* (strain A–180 and A–173) and various aerobic and anaerobic bacteria chiefly met with in association with *Cl. botulinum* in the canning industry. The toxins in filtrates were tested by subcutaneous inoculation into white mice.

In mixed cultures with *Cl. putrificum*, toxin production was slightly reduced. In association with *Cl. sporogenes* the toxin formation was diminished only when the organisms were grown on meat peptone broth in anaerobic conditions but not in aerobic. In association with *Bacillus teres* and *B. subtilis* the development of *Cl. botulinum* and its toxin formation were stimulated. Contrary to the findings of FRANCILLION (1925), it appeared that *Pseudomonas pyocyanea* did not impede the growth of *Cl. botulinum* and did not destroy its toxins; after prolonged culture, however, the growth of *Ps. pyocyanea* considerably surpassed that of *Cl. botulinum* numerically. It was also found that *Streptococcus thermophilus* and *Str. thermophilus* + *Ps. pyocyanea* impeded the growth of *Cl. botulinum* and toxin formation. A method for differentiation of *Cl. botulinum* and *Cl. putrificum* is described.—A. MOLDAWSKY.

HAINES, R. B. (1942). **The Occurrence of Toxigenic Anaerobes, especially *Clostridium botulinum*, in some English Soils.**—*J. Hyg., Camb.* **42.** 323–327. **57**

H. examined 106 samples of soil from 16 English counties, for the presence of *Cl. botulinum*, *Cl. tetani* and the gas-gangrene group of organisms (*Cl. welchii*, *Cl. septicum*, and *Cl. oedematiens*). After fractional sterilization at 80°C. for ½–1 hour, the samples were incubated in an enriching medium for 6–11 days. Toxic cultures were then identified by injection into mice protected by specific antitoxins. In the case of *Cl. botulinum*, a polyvalent (A + B) antitoxin was used first, and separate A and B antitoxins were employed for final typing. Unprotected mice inoculated with toxic cultures were used as controls.

37% of the samples examined gave rise to toxic cultures, *Cl. botulinum* being present in a percentage ranging from a certain 5, to a possible 14. Four of the five strains positively identified were Type A, the fifth was Type B.

The morphological and cultural characters of one of the Type A strains are described in detail.—I. W. B.

I. CASTELL, C. H. (1942). **Powdered Grass as an Enrichment Medium for Acid-Forming Anaerobes.**—*J. Bact.* **43.** 463–471. **58**

II. CASTELL, C. H. (1942). **Further Studies on the Use of Plant Materials as Enrichment Media for Butyric-Acid-Forming Anaerobes.**—*Ibid.* 473–479. **59**

I. C. describes a medium for initiating growth of small numbers of butyric-acid-forming clostridia. It consists of powdered grass, corn (maize) starch, calcium carbonate, and tap water. The effect of variations in the basal medium on the growth of three of the anaerobes is described. The medium allows of cultivation in screw-capped bottles, without any additional measures for bringing about anaerobic conditions.

II. Similar types of media to those described in I were made with (1) dried grasses, (2) ground grains, (3) fruits and vegetables, and (4) prepared foods, such as breakfast foods etc. It was found that a wide variety of plant material was useful for initiating growth of small inocula of butyric-acid-forming and certain other clostridia.—ISOBEL W. BURTON.

ERRINGTON, P. L. (1942). **Observations on a Fungus Skin Disease of Iowa Muskrats.**—*Amer. J. vet. Res.* **3.** 195–201. **60**

A large number of muskrats handled in a district of north-west Iowa were found to be affected with *Trichophyton mentagrophytes*. There was often partial denudation of hair with frequent pustulation. Mortality was particularly high amongst young muskrats, the disease seeming to make its appearance with the breeding season. Observations showed, however, that the resulting high mortality was offset by the prolongation of the breeding season and the production of extra litters.
—J. C. BUXTON.

GIRARD, H. (1942). De la vaccination en matière de péripneumonie bovine. **[Vaccination against Bovine Contagious Pleuro-Pneumonia].**—*Bull. Soc. Path. exot.* **35.** 80–87. **61**

G. reports that Curasson's formol (lung exudate) vaccine [*V. B.* **8.** 25.] sometimes fails to immunize cattle and therefore advises that it should no longer be used.

In 1939, he observed the preparation of culture vaccine in the veterinary laboratory of the Gold Coast and tested a small quantity of it on cattle in French African territory, results being excellent. As, however, the preparation of culture vaccine has not been undertaken by the French authorities, G. has experimented with a lanolin vaccine [*V. B.* **9.** 468.], which appears superior to formol vaccine. G. states, however, that it can never be as successful as culture vaccine, owing to the necessity to make it on the spot after an outbreak has started.—J. E.

PRESTON, W. S. (1942). **Arthritis in Rats Caused by Pleuropneumonia-Like Micro-Organisms and the Relationship of Similar Organisms to Human Rheumatism.**—*J. infect. Dis.* **70.** 180–184. **62**

P. studied an arthritis in rats caused by organisms of the pleuro-pneumonia group. This arthritis may be accompanied by suppurative lesions in other parts of the body. The lesions in the joints commence with swelling and oedema, and this is followed by a purulent inflammation, mostly peri-articular, the subsequent abscess involving all the structures of the joint. The cartilage, however, is attacked relatively late and in some cases may not be diseased at all. It appears that the disease resembles pyogenic arthritis in man rather than rheumatoid arthritis. The organisms seem to be the same as the L4 type described by KLIENEBERGER. These organisms have also been obtained from middle

ear disease in rats. So far no such organisms, or related organisms, have been isolated from cases of rheumatoid arthritis in man.—D. L. HUGHES.

NAKHIMOVSKAYA, M. I. (1939). Antagonizm mezhdu bakteriyami. (Literaturnyĭ obzor). **[Bacterial Antagonism].**—*Mikrobiologiya, Moscow.* **8.** 1014–1032. **63**

This is a detailed review of present knowledge on the subject. The different types of antagonism are discussed, *viz*, antagonism *in vivo* and *in vitro*, direct and indirect, functional, bactericidal, and lysogenic, and hetero- and iso-antagonism. Methods of investigation in liquid and solid media are described. Causes of antagonism are also discussed, including exhaustion of the medium, physico-chemical changes in nutritional substrates, toxic products of metabolism, mitogenetic radiation, and the Bail theory.

No original work was done. There is a good list of references.—A. MOLDAWSKY.

MANTEĬFEL', A. Y. (1940). Sporoobrazovanie u bakteriĭ. I. Obzor literatury po voprosu o vliyanii razlichnykh faktorov na sporoobrazovanie u bakteriĭ. **[Spore Formation by Bacteria. I. Review of the Literature on Factors Influencing Spore Formation].**—*Mikrobiologiya, Moscow.* **9.** 16–26. **64**

The literature and various viewpoints regarding the reason and the factors stimulating and inhibiting sporulation in aerobic and anaerobic cultures are discussed. The influence is discussed of temperature, oxygen, moisture, inorganic salts and nitrogen compounds, and pH of the culture media, as well as the exhaustion of nutritional substances in the media and deleterious products of metabolism.

M. considers that differences in the results obtained by different workers who have worked with the organisms discussed, are due to the complex reactions occurring during sporulation.—A. MOLDAWSKY.

SHERMAN, J. M., & NAYLOR, H. B. (1942). **Ageing without Reproduction and the Viability of Young Bacterial Cells at Low Temperatures.**—*J. Bact.* **43.** 749–756. **65**

Young cells of *Bacterium coli* held at 1°C. for periods up to 36 days, remained physiologically young, as judged by sensitivity to cold shock, and the ability to initiate reproduction without time lag. The death rate of young cells at 1°C. was faster than that of mature cells at the same temperature.

In contrast to these findings, young (4-hour) cultures of *Streptococcus lactis* aged progressively at 1°C., and at the end of a week had the properties of mature (24-hour) cultures. The death rate in this case was much slower than that of mature cells under the same conditions, possibly because of the ability of this organism to age at 1°C., without reproduction.—I. W. B.

MCILWAIN, H. (1942). **Bacterial Inhibition by Metabolite Analogues. 4. Analogues of Pantothenic Acid.**—*Biochem. J.* **36.** 417–427. [For part III, see *V. B.* **12.** 576]. **66**

An investigation of the effect on bacterial culture growth of representative analogues of pantothenic acid (a growth-promoting essential for many pathogenic organisms) indicated that the sulphonic acid and sulphonamide derivatives had a bacteriostatic action, an effect probably due to competitive enzyme inhibition [see also WOODS—*V. B.* **10.** 790]. The sulphonic acid derivative, pantoyl taurine, was found to be most active with an antistreptococcal index of 500 and an antipneumococcal index of 1,000 (the antibacterial index being the value of the ratio, concentration of inhibitor over concentration of growth essential, at which growth is just prevented by the inhibitor), while the sulphonamide derivative, pantoyltauramide gave an antistreptococcal index of 2,000 and an antipneumococcal index of 10,000. Only organisms requiring pantothenate were susceptible to these compounds, *e.g.* exacting strains of *Corynebacterium diphtheriae* were inhibited, while strains which did not require pantothenate were unaffected.

Other derivatives in the form of pantothenate homologues were inhibitory to organisms which did not require pantothenate, *e.g. Bacterium coli*, an effect possibly due to interference with pantothenate metabolism since such organisms were found to synthesize the compound.—J. LOCHIEL MCGIRR.

HEHRE, E. J., & SUGG, J. Y. (1942). **Serologically Reactive Polysaccharides produced through the Action of Bacterial Enzymes. I. Dextran of Leuconostoc Mesenteroides from Sucrose.**—*J. exp. Med.* **75.** 339–353. **67**

Growth of *L. mesenteroides* on sucrose-broth media leads to the formation of a serologically reactive polysaccharide of a dextran nature. It was proved that the reaction can take place in the absence of the organisms, suggesting that the action is due to an enzyme or to some other heat-labile agent contained in sterile filtered extracts derived from the growth of the organisms. Purified preparations of the dextran formed by the sterile extracts were found to be similar to the dextran produced in sucrose broth cultures of the bacteria in regard to both chemical and serological properties. This serological similarity was established not only by tests against leuconostoc antisera but also by cross reactions with antisera of types 2, 20, and 12 pneumococci, and by tests against a series of variously absorbed antisera.

The optimum pH for polysaccharide production was 5–6, although the extract was active over the range of pH 4–8. Experiments were designed to show the lability of the active agent and the indispensability of sucrose for dextran production, although leuconostoc bacteria after nine successive growths on glucose broth gave an extract which was able to form the polysaccharide from sucrose to a greatly diminished extent.—A. EDEN.

See also absts. **176, 197.**

DISEASES CAUSED BY PROTOZOAN PARASITES

KAZANSKIĬ, I. I. (1939). Profilaktika i likvidatsiya massovykh zabolevaniĭ zhivotnykh su-auru. **[Prophylaxis and Control of Surra].**—*Sovyet. Vet.* No. 6. pp. 33–36. **68**

K. discusses the control of surra and its eradication from any particular area within three years. Cattle are to be regarded as carriers. He deals with the general epidemiology of the disease—the vector flies, the carriers, and the infected animals. The measures advocated involve routine examination of susceptible animals in the infected area, *viz*, camels, horses, asses, and dogs [the method is not stated—whether by microscopic examination of the blood or by a serological test or both]. Similarly, some less systematic examination of other "dangerous" farm animals should be carried out. [No details are given of the way in which this is to be done. The work involved would be very heavy if any detailed blood testing were to be done according to a system likely to produce useful results.] Movements of infected animals and potential carriers would be controlled during the fly season.

Prophylactic dosage with naganol is advocated.

When this was practised the infection rate of camels fell to 0·4% in the first year.—E. R. PARISER.

See also absts. **201, 202.**

*SFORZA, M. (1940). Osservazioni sulla biologia del Trypanosoma cazalboui trasmesso in serie nei vitelli mediante inoculazione di sangue. [**Biology of** *T. cazalboui* [*vivax*] **after Serial Passage Through Calves**].—*Riv. Parassit.* **4.** 209–220. [Translation of abst. in *Jber. Vet.-Med.* **69.** 224]. **89**

S. found, in transmission experiments with *T. vivax* in calves, that there was no change in morphology or virulence of the organism after 50 passages of infective blood.

See also absts. **128, 129.**

CULBERTSON, J. T., & KESSLER, W. R. (1942). **Age Resistance of Mice to** *Trypanosoma cruzi*.—*J. Parasit.* **28.** 155–158. **70**

A strain of *T. cruzi* which had been maintained in rats and in culture, when inoculated intraperitoneally into mice caused the death of animals of 25 days old, but animals above this age usually survived. Mice below nine days old were regularly infected with cultures of *T. cruzi* given orally, but mice of 20 days or over resisted. Infections resulting from oral administration were less intense, and less often fatal, than those following intraperitoneal inoculation. Infections in mice rarely attained the intensity of those in rats, and it is suggested that this may be explained by an acclimatization of the strain to rats during maintenance.—U. F. R.

MORGAN, B. B., & WISNICKY, W. (1942). **A Further Note on the Incidence of Trichomonas Fetus in Slaughtered Cattle from a Wisconsin Abattoir.**—*J. Amer. vet. med. Ass.* **100.** 471–472. **71**

The examination of 1,577 cows and 211 bulls from a local packing station in Wisconsin revealed *T. foetus* infection in two out of 997 pregnant cows, and in 13 out of 580 non-pregnant animals, all 13 infections being associated with pyometra. No infection was detected in bulls. The incidence of infection amongst the cows was about 1%. Animals with pyometra formed 6·3% of the total cows examined, and 13% of these were infected.

Material from slaughtered animals was inoculated into culture media, and was examined at the laboratory in the fresh state and after incubation. Egg slants layered with saline or Ringer's or Locke's solution were used as a routine, saline and serum being used in some cases. In four cases, apparently pure cultures of trichomonads were obtained by migration techniques. Several of the strains of *T. foetus* maintained in the laboratory were contaminated with *Corynebacterium renalis*, which apparently grows in association with the trichomonads, as the flagellates multiply more rapidly in Schneider's medium when the bacteria are present than they do in pure culture.—U. F. RICHARDSON.

LEVINE, N. (1940). **The Effect of Food Intake upon the Dimensions of** *Balantidium* **from Swine in Culture.**—*Amer. J. Hyg.* Sect. C. **32.** 81–87. **72**

Cultures of two strains of *Balantidium*, one of the *coli* type and one of the *suis* type, were grown in media containing varied percentages of rice starch, the number of organisms inoculated being such that all the available starch was used up in 48 hours. An initial increase and subsequent decrease in the length of the organisms occurred, and the length-width ratio of both strains decreased in the early stage of cultivation and increased when the starch had been used up. The characters used for the differentiation of *B. suis* and *B. coli* are discussed, and it is argued that the great variability of these characters even in the same strain of *Balantidium* from swine makes the validity of a separation into two species doubtful.—U. F. RICHARDSON.

LEVINE, P. P. (1942). **The Periodicity of Oöcyst Discharge in Coccidial Infection of Chickens.**—*J. Parasit.* **28.** 346–348. **73**

The periodicity of oocyst discharge was studied in infections with *Eimeria praecox*, *E. mitis*, *E. maxima*, *E. hagani*, and *E. necatrix*. *E. hagani* showed the most pronounced periodic discharge: between 3 p.m. and 9 p.m., 87–91% of the total daily output was discharged. *E. praecox* and *E. mitis* attained their peaks during the same time interval, but elimination of oocysts over the rest of the day reached 26–43% of the total output. *E. maxima* was erratic, as the peak was not reached in the same period each day. In *E. necatrix*, 47–62% of the oocysts were eliminated during the night and early morning, but it was difficult to draw conclusions since the oocysts are produced in the caeca which empty at different times from the main intestinal tract and from each other. Periodicity of oocyst discharge in *E. hagani* is so characteristic that it may be used as an additional criterion for the identification of this species.—C. H. S.

HOWELL, D. E., SANBORN, C. E., ROZEBOOM, L. E., STILES, G. W., & MOE, L. H. (1941). **The Transmission of Anaplasmosis by Horseflies (Tabanidae).**—*Tech. Bull. Okla. agric. Exp. Sta.* No. T–11. pp. 23. **74**

This bulletin records the results obtained in experiments on the transmission of anaplasmosis by tabanids over a period of 11 years. In the early work the isolation of experimental cattle was not carried out sufficiently strictly, but later a special isolation barn was built, and although some cattle have been kept in the barn for over two years, no natural cases of anaplasmosis have occurred. The flies used for the experiments were collected from healthy cattle in an area free from anaplasmosis and brought to the laboratory in cardboard boxes. Flies were fed under glass funnels, as when they were liberated in the stalls they immediately flew to the windows or ceilings.

The experiments are classified under five headings :—(1) immediate transfer feedings from acute cases, (2) immediate transfer feedings from carrier cases, (3) immediate and deferred feedings from acute cases, (4) immediate and deferred feedings from carrier cases, and (5) deferred feedings.

In group (1), 12 cattle were used with five positive results, the fewest number of bites causing infection being 13 by *Tabanus oklahomensis*. Disease developed in this case 45 days after the first bite. In other cases the incubation period varied from 22–87 days from the first bite. Group (2) gave one positive result in 11 experiments, group (3) gave seven positive results in 12 experiments, and in group (4) two positive results were given in five experiments. Deferred feeding alone gave no positive results, although the delay in transfer between infected and experimental animals was sometimes as short as 5 min. It was found possible to keep flies alive in their cardboard boxes for as long as 20 days provided temperature and humidity were controlled.

Positive results were obtained with six species of *Tabanus*, but not with *Silvius pollinosus* or species of *Chrysops*. It is emphasized that the seasonal incidences of tabanids and anaplasmosis correspond, and it is suggested that the disease is transmitted by the flies as a result of the contamination of their mouth parts, and that "carrier" animals are not an important immediate source of infection in view of the large number of bites required before transmission occurs from them.

—U. F. RICHARDSON.

BOGORODITSKIĬ, A. V. (1941). K diferentsial'noĭ diagnostike piroplazmoza i frantsaielloza krupnogo rogatogo skota. **[Differential Diagnosis of Piroplasmosis and Francaiellosis in Cattle]**.—*Veterinariya, Moscow.* No. 2. pp. 86–89. [French summary]. **75**

Whereas *Babesia bigemina* multiplies and destroys the erythrocytes very rapidly and may always be detected in smears during the acute febrile stage and often 2–3 days previously, in the case of *Françaiella colchica* the increase of the parasites in the blood is considerably slower and they may not be detected in the blood smear before the 2nd–4th day of illness. In B.'s opinion the absence of the parasites from the blood smear during the febrile attack may possibly exclude piroplasmosis and justify a provisional diagnosis of françaiellosis.

—A. MOLDAWSKY.

See also absts. **14, 270.**

COFFIN, D. L., & STUBBS, E. L. (1942). **Observations on Canine Leptospirosis in the Philadelphia Area.**—*Vet. Ext. Quart. Univ. Pa.* No. 87. pp. 3–14. **76**

It is argued that laboratory procedure must be adopted if accurate diagnosis of canine leptospirosis is to be made, and that examination of dark-field and of stained specimens, and g. pig inoculation are unsatisfactory because of limited success in proportion to the time and effort expended. It is suggested that active infection may be diagnosed if typical symptoms of the disease are associated with agglutination at a titre of 1 : 1,000 or over, or if typical or atypical symptoms are associated with a rising aggln. titre of the serum, or if typical or atypical symptoms occur in conjunction with positive culture.

In infected dogs there is a primary septicaemic stage with fever, together with gastro-enteric symptoms, and weakness. The conjunctiva has a "muddy" appearance in all cases. This stage is followed by a toxic stage characterized by nephritic symptoms with uraemia, or hepatic symptoms with cholaemia, or a combination of the two. Severe dehydration with attendant emaciation quickly occurs in non-icteric dogs.

Of urban and suburban dogs under veterinary treatment for conditions other than leptospirosis, 19% gave positive aggln. reactions, but in hounds the percentage was only 2·04. 86% of the cases gave stronger reactions to *L. canicola*, and 14% to *L. icterohaemorrhagiae*.—U. F. RICHARDSON.

MORTON, H. E. (1942). **Susceptibility of Syrian Hamsters to Leptospirosis.**—*Proc. Soc. exp. Biol., N.Y.* **49.** 566–568. **77**

In investigating the usefulness of Syrian hamsters as laboratory animals in work on leptospirosis, it was found that when a strain of *L. icterhaemorrhagiae* was injected subcutaneously into hamsters 3–5 weeks old, death resulted in 5–8 days. Animals should be less than five weeks old if it is wished to produce death. A strain of *L. canicola* failed to cause the death of young hamsters. In the case of both organisms, blood cultures were negative if made 24 hours after inoculation, but at 48 and 72 hours after inoculation, positive cultures were obtained.—U. F. RICHARDSON.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

MÖHLMANN, H. (1941). Immunitätsdauer und Ursache von Immunitätsdurchbrüchen nach der Vakzinierung gegen Maul- und Klauenseuche. **[Duration of Immunity and Causes of Vaccination Breaks in Foot and Mouth Disease]**.—*Berl. Münch. tierärztl. Wschr.* May 9th. 225–229. **78**

A study was begun early in 1938 of the duration of active immunity after vaccination and the causes of breakdown in immunity of vaccinated herds, the observations covering 3 million vaccinated cattle in more than 300,000 herds. The duration of the immunity was considered to be 10–12 months. The inoculations were carried out from March 1938 to March 1939, *i.e.* at the time when the severe pandemic was raging in Germany and other parts of Europe.

The most common cause of apparent breakdown in immunity was the appearance of infection due to virus of a type different to that against which the vaccine was made, and also the fact that on some farms animals remained unvaccinated, or that, after vaccination, unvaccinated animals were introduced, with the result that cases occurred in unvaccinated animals, due to the original type of infection. Infection also broke out in animals in which dosage used had been insufficient due to shortage of vaccine. Breakdowns in immunity, officially recorded, amounted to 0·165%. It is stated, however, that the true percentage is double this figure, as owing to war conditions, not all the later breakdowns were reported.—J. Z.

*BORTOLOTTI, M. (1941). Sull'importanza dei volatili nella diffusione dell'afta epizootica. **[Importance of Birds in the Spread of Foot and Mouth Disease]**.—*Nuova Vet.* **19.** 213. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 272]. **79**

F. & M. disease was observed in two cows in Campobasso (central Italy). B. can only explain the transmission of the infection to the cattle by assuming that it was spread by birds. It is stated that the nearest infected herd was 30 km. away, that the region in which the infection occurred was solitary, and that no person had come near the farm.—E. R. PARISER.

*VIOLANTE, F., & INDOVINA, J. (1940). Ricerche sulla malattia d'Aujeszky. Ripartizione del virus nel sangue. **[Presence of Aujeszky's Disease Virus in the Blood]**.—*Boll. Ist. sieroter. Milano.* **19.** 414–418. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **140.** 341]. **80**

The virus of Aujeszky's disease is demonstrable in the serum, but not in the corpuscles. The blood serum of inoculated animals is infective, and it is of no importance whether the blood is sampled after symptoms have developed or at an earlier stage.

KUBES, V., & GALLIA, F. (1942). Estudios inmunológicos sobre la pluralidad de los virus rábicos en Venezuela. **[Immunological Studies on the Plurality of Rabies Viruses in Venezuela]**.—*Bol. Inst. Invest. vet., Caracas.* **1.** No. 1. pp. 46. [English summary]. **81**

In view of the existence, in Venezuela, of two forms of rabies (paralytic rabies in cattle associated with transmission by bats, and the common form in dogs and other animals, in which bites by canines are the usual source of infection), the authors undertook immunological studies of six different strains of virus. Three of them were obtained from bovine cases of paralytic rabies, one from a rabid dog, and another from a bovine which had been bitten by a rabid dog. The sixth virus was a fixed Pasteur strain obtained from the Rockefeller Institute.

Cross-immunity tests showed that the viruses of Venezuelan origin were not identical, being divisible into two groups, *viz*, those from cattle with paralytic rabies and those of canine origin.

Vaccines prepared from Pasteur strains protect against the Venezuelan canine strains of virus but not against the paralytic strains. On the other hand

vaccines prepared from paralytic strains protect against both types.—MILLER WATSON.

STOVALL, W. D., & BLACK, C. E. (1940). **The Influence of pH on the Eosin Methylene Blue Method for Demonstrating Negri Bodies.**—*Amer. J. clin. Path.* (Tech. Sect.) **4.** 1–8. **82**

The varied results obtained with the eosin methylene blue method for Negri bodies, suggested to the authors that the pH of the fluids used might be important, so they experimented with various eosins and with methylene blue, used at different pH values.

It was found that eosin dissolved in ethyl alcohol at pH 3 and methylene blue buffered to pH 5·3 (by acetate acetic acid buffer), gave the most intense colour picture on which stained Negri bodies stood out well in red. The technique is given in detail.—J. E.

STOVALL, W. D., & PESSIN, S. B. (1942). **Problems in the Laboratory Diagnosis of Rabies.**—*Amer. J. publ. Hlth.* **32.** 171–175. **83**

The authors discuss the differentiation of Negri bodies from other inclusion bodies and cell structures and difficulties in making a diagnosis in suspected rabies specimens from the examination of stained sections. They have shown that apparently normal brains of cattle and sheep and brains of rabid animals contain structures intermediate in their morphology between Negri bodies and "lyssa bodies" [GOODPASTURE (1925)]. The distribution of Negri bodies in various situations of the brain and spinal cord of 84 rabies cases is tabulated. They consider that sections fixed by acetone and stained by eosin-methylene-blue of low pH [see preceding abst.] give better results than the impression method, and they use this method before resorting to animal inoculation tests. For badly decomposed specimens to be used for animal inoculation, they recommend filtration through a number 3 Seitz filter.
—C. V. WATKINS.

YEN, C. H. (1942). **Protective Value of Antiviral Serum in Experimental Rabies Infection.**—*Proc. Soc. exp. Biol., N.Y.* **49.** 533–537. **84**

Antiviral sera were prepared from rabbits by repeated intra-abdominal inoculations of 5 ml. doses of a phenol-treated vaccine given twice weekly for the first four weeks followed by similar injections with a live vaccine for 4–6 weeks.

A single dose of such a serum given intra-abdominally 10–15 min. after experimental intracerebral infection of mice prolonged life; it prevented death of some mice infected intramuscularly, depending on the dosage of infection and the amount of antiviral units given. The combined use of vaccine and antiserum protected mice against 100,000 intracerebral M.L.D. of the virus.
—M. H. KYAW.

See also abst. **274.**

LEVADITI, C. (1942). Association entre ultravirus. Herpès et rage des rues. **[Association between Herpes and Street Rabies Viruses].**—*C. R. Soc. Biol. Paris.* **136.** 331–332. **85**

L. refers to previous papers by himself and others connected with this subject and describes four separate experiments carried out in mice to test the reactions in these animals of herpes and rabies street viruses. It is shown that when a mixture of both herpes and rabies viruses was inoculated by the intracerebral route, they persisted in equal virulence up to a maximum of two passages, beyond which the rabies virus began to diminish and finally disappeared altogether. The reason given for this is that the action of herpes virus upon the nerve cells was such that it altered their anatomical structure sufficiently to render impossible the formation of Negri bodies and that, when the two viruses attacked the same nerve cell, one supplanted the other. It is postulated that, when a macromolecule of virus has succeeded in modifying the metabolism of a cell to its own requirements, that cell is then incapable of supporting macromolecules of a different virus.—J. C. BUXTON.

SPRUNT, D. H. (1942). **The Effect of Undernourishment on the Susceptibility of the Rabbit to Infection with Vaccinia.**—*J. exp. Med.* **75.** 297–304. **86**

Slight differences in the susceptibility of the rabbit to vaccinia virus can be determined by the intradermal injection of suitable fourfold dilutions followed by an estimation of the 50% end point. The experiments of S. showed that simple undernourishment decreased the susceptibility of the skin to infection. It is suggested that this increased resistance depends upon a general somatic malnutrition resulting in the absence of certain cell constituents required for the propagation of the virus. Poor condition, however, was not the sole factor involved since deficient diets caused a significant increase in the amount of interstitial fluid in the subcutaneous tissues. Under these conditions virus particles tended to become localized to the site of injection with a probable decreased contact of virus elements with susceptible cells.—R. E. GLOVER.

GREEN, R. H., ANDERSON, T. F., & SMADEL, J. E. (1942). **Morphological Structure of the Virus of Vaccinia.**—*J. exp. Med.* **75.** 651–656. **87**

Suspensions of washed elementary bodies of vaccinia were sedimented at 12,400 r.p.m. for 20 min. and then examined as thin films on a collodion membrane in the electron microscope. The particles presented a high degree of regularity in external outline and internal form: they were almost rectangular in shape and usually possessed five dark, circumscribed areas. E.B. treated by heat, dehydration, or dried from the frozen state retained the structure of living particles: alkali treatment liberated a nucleo-protein antigen and produced some swelling and loss in definition of the bodies. Particles obtained by high-speed centrifugation of normal kidney tissue, showed no structural resemblance to virus bodies. The details are shown in a series of photomicrographs.—R. E. GLOVER.

LÉPINE, P., LEVADITI, C., & GIUNTINI, J. (1941). Détermination de la taille du virus vaccinal par l'ultracentrifugation et le microscope à fluorescence. **[Determination of the Size of Vaccinia Virus by Ultracentrifugation and Fluorescence Microscopy].**—*Ann. Inst. Pasteur.* **67.** 477–480. [Abst. from abst. in *Bull. Inst. Pasteur.* **40.** 179]. **88**

Suspensions of elementary bodies obtained by the high speed centrifugation of infected allantoic fluid, were counted in a special chamber attached to a fluorescence microscope. According to the time of centrifugation and the number of bodies in a given area, it was calculated that the virus particles had an average size of 179 mμ.—R. E. GLOVER.

SCOTT, J. P. (1942). **Swine Influenza Experiments.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 28–37. **89**

Studies of several outbreaks of swine influenza in the Philadelphia stock yards showed that in these cases the disease was associated with *Pasteurella suiseptica* infection. Pure cultures of the organism, however, were not pathogenic for experimental pigs. The addition of swine influenza virus caused a non-transmissible form of influenza which was lethal to four of ten pigs tested.

Two of a large batch of pigs which had recovered from experimental swine influenza, succumbed during inclement weather to the disease, one and three months

respectively after being infected. It is suggested, therefore, that disease carriers may exist.

Following experiments with swine influenza and swine fever together in individual pigs, it appeared that the former disease may be a causative factor in breakdowns during S.F. serum-virus immunization. The co-existence of both diseases in individuals was established. In such animals the outstanding lesion was petechiation of the visceral pleura.

Of six samples of commercial S.F. serum tested, five showed neutralizing substances against swine influenza virus.

The most effective method of establishing immunity appeared to be by the intranasal instillation of 20 ml. of non-virulent egg-passaged swine influenza virus. Tests with hyperimmune serum in the treatment of infected animals gave negative results.—D. D. OGILVIE.

*SLAGSVOLD, L. (1942). Smittsam grisehoste (Parainfluenza). **[Infectious Cough in Swine (Para-Influenza)].**—*Norsk VetTidsskr.* p. 57. [Abst. from abst. in *Skand. VetTidsskr.* **32.** 378 and 380]. **90**

An account of the condition commonly known as piglet influenza or *Ferkelgrippe.*—G. B. BROOK.

BURNET, F. M. (1941). **Influenza Virus Infections of the Chick Embryo by the Amniotic Route. 2. Titrations and Serum Neutralization Tests.**—*Aust. J. exp. Biol. med. Sci.* **19.** 39–44. [Author's summary copied *verbatim*]. [For part I, see *V. B.* **12.** 24]. **91**

When psittacosis virus is administered intranasally to mice in high dilution, characteristic focal lesions are produced, the number of which can be used as a measure of the concentration of virus.

Using this method of estimating virus activity, it has been shown: (a) that none of the commonly used sulphonamide drugs has any influence on the infection: (b) that mice immunized by several methods failed to show increased resistance to infection by the intranasal route; (c) that no reduction in activity of the virus results when it has been exposed to the action of immune serum *in vitro.*

Immunization with formolized virus, which is ineffective against intranasal infection, produces a definitely increased resistance to intraperitoneal infection.

BURNET, F. M., & FOLEY, M. (1941). **Influenza Virus Infections of the Chick Embryo by the Amniotic Route. 3. Changes in the Activity of Influenza Virus on Continued Amniotic Passage.**—*Aust. J. exp. Biol. med. Sci.* **19.** 101–105. [See preceding abst.] **92**

The authors studied the changes during amniotic passage of strains "R" and "Bundoora", with the aim of developing strains suitable for human immunization; should a new strain appear, it might then be possible to attenuate it satisfactorily in a short time.

A rapid increase in virulence for the embryo occurred up to about the 12th passage, after which virulence did not increase further. There were no haemorrhagic lesions. With strain "R", virulence for mice increased up to the 30th to 40th passage, and then decreased, until with the 79th passage a wide range of concentrations of virus produced non-fatal pulmonary lesions. In ferrets, reactions became progressively less severe, but immunizing power was essentially undiminished.—A. W. BANKS.

FEDOROV, A. I., & DOBIN, M. A. (1941). O diferentsial'noĭ histologicheskoĭ diagnostike infektsionnoĭ anemii i septicheskikh zabolevaniĭ loshadeĭ. **[Histological Differential Diagnosis of Equine Infectious Anaemia and Septicaemia].**—*Veterinariya, Moscow.* No. 3. pp. 31–37. [French summary]. **93**

After the examination of over 100 cases of septicaemic and pyaemic conditions, such as traumatic septicaemia, complicated strangles, and purulent pneumonia, the authors conclude that the most characteristic histological feature of conditions of these types is myelosis characterized by the presence of considerable numbers of neutrophile leucocytes, whereas, as recognized by many other investigators, the essential changes in E.I.A. affect mostly the mesenchyme cells, along with disturbance of iron metabolism. Myelosis usually does not occur in E.I.A.

The following are the main distinctions on which to base histological diagnosis.

Liver. In E.I.A. well pronounced inter- and intralobular proliferation of mesenchyme occurs; there is considerable haemosiderosis and sometimes, mainly in chronic cases, necrobiosis in the centre of the lobules. In septic and pyaemic conditions there is well pronounced neutrophile myelosis; Kupffer cells are sometimes enlarged with occasionally particles of haemosiderin in hyperaemic areas; in odd cases there is diffuse necrobiosis of the liver cells.

Kidneys. In E.I.A. there is interstitial proliferation of the mesenchyme as in non-purulent interstitial nephritis, and glomerulo-nephritis; chronic cases are often accompanied by hypertrophy and hyaline degeneration of Malpighian bodies and Bowman's capsules. In septic and pyaemic conditions the most marked degenerative changes are observed in the tubules; there is also neutrophile myelosis and sometimes abscess formation.

Spleen. In acute and subacute cases of E.I.A. there is erythrocytosis of the spleen pulp; boundaries of follicles become obliterated and there is a decrease of haemosiderin; in chronic cases lymphocytosis predominates and sometimes eosinophilia. In septic and pyaemic conditions the pulp is occupied by neutrophile leucocytes; there is an abundance of haemosiderin.

Heart. In E.I.A. the changes are those of chronic interstitial myocarditis, the interstitium being infiltrated by lymphoid cells. In septic and pyaemic conditions there is degeneration of the muscle cells, often accompanied by neutrophile myelosis.

Lungs. In E.I.A. there is proliferation of the interalveolar walls; haemosiderosis is often present. In septicaemic and pyaemic conditions hyperaemia and oedema occur; neutrophile myelosis of the alveolar capillaries is always present; haemosiderosis is only occasionally seen.—A. MOLDAWSKY.

EZOVITOV, N. B., MARCHENKO, G. F., POGODIN, A. L., & DMITRIEV, K. G. (1941). K diferentsial'noĭ diagnostike infektsionnoĭ anemii i nuttallioza loshadeĭ. **[Differential Diagnosis of Equine Infectious Anaemia and *Babesia equi* Infection].**—*Veterinariya, Moscow.* No. 2. pp. 104–109. [French summary]. **94**

Basing their opinions on five years' experience, the authors discuss outstanding clinical features of both diseases. The clinical and haematological picture of some cases of *Babesia equi* infection may be indistinguishable from that of E.I.A. and *vice versa.* Amelioration of the illness by dosage with trypaflavine may indicate that the disease is *B. equi* infection.—A. M.

GINDIN, A. P., KUDRYAVTSEV, A. A., & ERGAEV, M. Y. (1941). Kliniko-anatomicheskie osobennosti infektsionnoĭ anemii u splenektomirovannykh zherebyat. **[Some Unusual Anatomical Changes in Splenectomized Foals Affected with Infectious Anaemia].**—*Veterinariya, Moscow.* No. 2. pp. 38–41. [French summary]. **95**

The changes affecting the reticulo-endothelial

system of splenectomized foals were more pronounced than those in non-splenectomized animals. Intensive proliferation of the Kupffer cells developed in the central parts of the liver lobules. The liver cells remained intact only at the periphery of the lobules, whereas those of intermediate layers underwent fatty degeneration. The haemosiderin in R.E. cells was present only in small quantities. In one splenectomized foal infected with E.I.A. and which lived 13 months after the operation, there was a compensatory formation of typical spleen tissue in the liver tissue; in two other foals and in one three-year-old horse in the same experiment, which died or were destroyed earlier, this was not observed. Soon after the operation there was an increase in erythrocytes.—A. MOLDAWSKY.

ORLOV, F. M. (1940). Vospriimchivy li gusi i utki k virusu infektsionnoĭ anemii loshadeĭ? **[Susceptibility of Geese and Ducks to the Virus of Equine Infectious Anaemia].**—*Sovyet. Vet.* No. 6. p. 20. **96**

Blood of horses affected with E.I.A. was inoculated into two geese and two ducks, all of which remained healthy. Blood taken from these birds 16–49 days after inoculation and inoculated into foals failed to cause infection.—A. MOLDAWSKY.

KELSER, R. A. (1942). **Equine Encephalomyelitis and its Control.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 22–27. **97**

A general review of the subject. Note is made of the reactions which occasionally follow vaccination. These include anaphylaxis, urticaria, liver damage, and partial paralysis of the hind quarters. [This is a further reference to "liver syndrome" in horses given an inoculation with an immunizing agent. See also *V. B.* **9.** 870.]—D. D. OGILVIE.

I. HOWITT, B. F. (1942). **"Relationship of the St. Louis and the Western Equine Viruses of Encephalitis to Man and Animals in California."**—*Proc. 12th Ann. Conf. Calif. Mosq. Contr. Ass., 1941.* pp. 3–23. Berkeley, California. **98**

II. REEVES, W. C. (1942). **Newer Developments in Knowledge of Insect Hosts and Vectors of Western and St. Louis Encephalitis.**—*Ibid.* pp. 23–37. **99**

III. HAMMON, W. McD. (1942). **Animal Reservoirs, General Epidemiological Summary, and Possible Control Measures for the American Summer Encephalitides.**—*Ibid.* pp. 37–51. **100**

IV. —. (1942). **Discussion on Papers on Equine Encephalomyelitis.** [Speakers: HARRISON, W. T., STEWART, M., GRAY, H. F., & HERMS, W. B.]—*Ibid.* pp. 52–55. **101**

I. During 1938–41 in the Central Valley area of California, 498 samples of human sera were tested for the presence of antibodies of Western E.E. and of St. Louis encephalitis viruses. Of these, 213 (43%) were positive to Western equine encephalomyelitis virus, 55 (12%) of 475 were positive to the St. Louis virus, and 62 (13%) neutralized both viruses. In tests of 60 horses, cows, and rabbits in the same area, 56 (93%) neutralized Western E.E. virus, 1 (2%) St. Louis virus, and 37 (62%) both viruses. Similarly, of 101 sera from wild rodents, 9 (9%) were positive for Western E.E. virus, and of 119, 4 (7%) were positive for St. Louis virus. Of 161 sera from birds, 70 (43%) neutralized Western E.E. virus, 8 (5%) St. Louis, and 30 (13%) both viruses. Similar observations were made in an area near San Francisco Bay where few mammals or domestic birds were found to have antibodies to either virus. Of 144 sera from acute cases of human encephalitis in this area only one neutralized St. Louis virus, and all were negative to Western E.E. virus.

II. Recent work has shown that St. Louis virus can be transmitted by *Culex pipiens* mosquitoes. *Aëdes* mosquitoes are the probable vectors of Eastern and Western E.E. There is evidence that *Dermacentor andersoni*, *Triatoma sanguisuga*, and *Culex tarsalis* may also be implicated. The hypothesis is advanced that infection is carried over the winter by hibernating *Culex tarsalis* females, that *Culex* species may be responsible for the endemic phase in avian reservoirs, that species such as *C. tarsalis* by feeding occasionally on mammalian hosts may transfer infection to them, and that *Aëdes* species may then act as vectors to other mammalian hosts.

III. A survey of infection with encephalitic viruses was undertaken in animals in the Yakima Valley, Washington. There was evidence that about 20% of wild birds and 50% of domestic fowl (chickens, ducks, geese, pigeons, turkeys) had at some time been infected. Of 159 domestic animals, 36% neutralized St. Louis virus and 35% the equine virus. Practically all unvaccinated horses and mules showed antibodies to both viruses. Of 123 wild mammals, 8% had been infected with each of the viruses. Possible control measures are considered.

IV. Domestic problems relating to the extension of mosquito eradication schemes as a means of control of the encephalitic virus diseases are discussed.

—D. D. OGILVIE.

HAMMON, W. McD., REEVES, W. C., BROOKMAN, B., & IZUMI, E. M. (1942). **Mosquitoes and Encephalitis in the Yakima Valley, Washington. I. Arthropods Tested and Recovery of Western Equine and St. Louis Viruses from Culex tarsalis Coquillett.**—*J. infect. Dis.* **70.** 263–266. **102**

HAMMON, W. McD., REEVES, W. C., & IZUMI, E. M. (1942). **Mosquitoes and Encephalitis in the Yakima Valley, Washington. II. Methods for Collecting Arthropods and for Isolating Western Equine and St. Louis Viruses.**—*Ibid.* 267–272. **103**

BANG, F. B., & REEVES, W. C. (1942). **Mosquitoes and Encephalitis in the Yakima Valley, Washington. III. Feeding Habits of Culex tarsalis Coq., a Mosquito Host of the Viruses of Western Equine and St. Louis Encephalitis.**—*Ibid.* 273–274. **104**

REEVES, W. C., & HAMMON, W. McD. (1942). **Mosquitoes and Encephalitis in the Yakima Valley, Washington. IV. A Trap for Collecting Live Mosquitoes.**—*Ibid.* 275–277. **105**

HAMMON, W. McD., REEVES, W. C., BROOKMAN, B., & GJULLIN, C. M. (1942). **Mosquitoes and Encephalitis in the Yakima Valley, Washington. V. Summary of Case against Culex tarsalis Coquillett as a Vector of the St. Louis and Western Equine Viruses.**—*Ibid.* 278–283. **106**

I. In the summer of 1941 the authors collected 15,610 specimens of living arthropods, of which 12,466 were mosquitoes, including 4,655 *C. tarsalis*. Specimens were frozen and inoculated into laboratory animals, as a result of which, three strains of St. Louis encephalitis virus and five strains of Western equine encephalomyelitis virus were isolated from *C. tarsalis* alone. Final identification of the viruses was carried out by means of neutralization tests with specific hyperimmune serum. It is pointed out that this is the first occasion upon which St. Louis virus has been recovered from a source other than human tissues and also that it represents the first recovery of either virus from a mosquito.

II. Various methods are discussed for the collection of live arthropods, specimens of which were identified under chloroform anaesthesia on the stage of a microscope and were then packed in sealed glass

containers, frozen, and stored in dry ice at −76°C. for shipment to a central laboratory. An inoculum was prepared from the specimens and the viruses both of St. Louis encephalitis and Western E.E. were subsequently recovered from Swiss mice which had been inoculated.

III. From a series of precipitin tests it is shown that *C. tarsalis* feeds in nature upon a variety of different species which include cattle, horses, sheep, pigs, dogs, and chickens as well as man.

IV. A description is given with diagrams of a movable trap for the collection of mosquitoes used in the experiments mentioned above.

V. The authors discuss at length the evidence which they and others have obtained and draw the conclusion that *C. tarsalis* is probably the most important vector of Western E.E. and St. Louis encephalitis viruses in the Yakima Valley, but whether or not the same is true of other districts is not known.—J. C. B.

VAN WAGENEN, R. J. (1941). **Equine Encephalitis in San Joaquin Valley.**—*Calif. West. Med.* **54.** 264–267. **107**

A clinical account of infections in human beings with the virus of E.E. in the San Joaquin Valley, California during 1937–38. Attempts to demonstrate the virus in cases that occurred in 1937 failed. In 1938, Western type E.E. virus was isolated from a human case. At the time of writing, serum samples from 15 human cases had shown neutralizing antibodies.

The author doubts whether this is a new disease of human beings. It probably occurred in horses as far back as 1847. He suggests that a better name would be "avian encephalomyelitis", because birds possibly act as host reservoirs. The method of spread to human beings is in doubt though there is evidence incriminating mosquitoes. Transmission from horse to man has never been proved, but cases occur in human beings where there is a high incidence of the disease in horses. None of the human cases now reported occurred on premises in proximity to an affected horse.

YAKUSHEV, V. I., KUDRYAVTSEV, A. A., & POPOV, N. A. (1941). K fizioterapii entsefalomielita loshadei. **[Short-Wave Therapy in Equine Encephalomyelitis].**—*Veterinariya, Moscow.* No. 2. pp. 36–37. [French summary]. **108**

In preliminary experiments the authors found that the incubation period in artificially infected dogs and rabbits treated by short-wave therapy was prolonged from several hours to several days. This was especially pronounced in dogs.—A. MOLDAWSKY.

KRESS, F. (1941). Virusabortus bei der Stute. **[Virus Abortion in Mares].**—*Wein. tierärztl. Mschr.* **28.** 320. **109**

Virus abortion has been observed in Austria since early 1940. The virus was transmitted from a foetus to g. pigs and to a pregnant mare and her foal. Signs of infection [no details] are visible in all the foetal organs and nuclear inclusion bodies have been seen. It is suggested that the virus in mares is pneumotropic, as on one farm four abortions were soon followed by the appearance of broncho-pneumonia in eight in-contact horses [this observation supports MANNINGER's contention that this so-called "virus abortion" is merely a secondary manifestation of equine influenza—see *V. B.* **12.** 150].—J. E.

See also abst. **8.**

BOYNTON, W. H., WOODS, G. M., WOOD, F. W., & CASSELBERRY, N. H. (1942). **Cell Changes in the Gall Bladder as an Aid in the Diagnosis of Hog Cholera.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 44–47. **110**

A possible method of diagnosis of swine fever by staining thin smears of the gall bladder is described. The gall bladder is dissected from the liver, and incised throughout its length, and scrapings are taken from the neck and the adjacent area. In addition, smears have been made from cases of *Pasteurella suiseptica* and *Salmonella cholerae-suis* pneumonia, enteritis, verminous infestations, and erysipelas. In S.F. cases, the nuclei stained very distinctly and inclusion bodies appeared in the nuclei of many of the glandular cells. In negative cases the nuclei were poorly stained, there were no inclusion bodies, and the preparations were clouded with mucoid material. It is suggested that the difference in the microscopic pictures of positive and negative cases is significant, and that the method may be of value in confirming diagnosis of the disease.—D. D. OGILVIE.

BOYNTON, W. H., WOODS, G. M., WOOD, F. W., & CASSELBERRY, N. H. (1942). **Immunological Studies with Hog Cholera Tissue Vaccine.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 38–43. [Similar article appeared in *Vet. Med.* **37.** 214–216]. **111**

Experiments are described to determine (1) the duration of immunity following a single dose of tissue vaccine, (2) the immunity resulting from intradermal vaccination, and (3) the immunity following simultaneous use of swine fever serum and tissue vaccine. It was concluded from experiment (1) that doses of 5 ml. and 10 ml. of vaccine induced satisfactory immunity for 5–6 months. The immunity resulting from a 5 ml. dose, however, was less complete at the end of the period than at the beginning.

In experiment (2), two groups of seven pigs and one group of 14 received intradermal doses of 2 ml., 1 ml. and 0·5 ml. of vaccine respectively. One pig inoculated with 1 ml. of vaccine succumbed when exposed to infection and two which had received a dose of 0·5 ml. showed clinical symptoms of disease but survived. All others were immune when injected with 2 ml. of virus after an interval of 1–3 months.

In experiment (3) simultaneous injections of 30 ml. of serum and 5 ml. of vaccine were given. A reduced immunity resulted. It is suggested that vaccination with this combination may be of value in herds where losses are occurring from diseases other than swine fever and in which immunization against S.F. is necessary.—D. D. OGILVIE.

*VAN DIJK, J. J. (1941). Praktijkervaringen met formolvaccin en viruspestserum (R.S.I.) bij de bestrijding van varkenspest. **[Experiences with a Formol Vaccine and Serum against Swine Fever].**—*Tijdschr. Diergeneesk.* **68.** 254–262. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **140.** 373]. **112**

Details are given of the results of inoculation of pigs against S.F., with serum alone, formol vaccine alone, and formol vaccine in combination with serum. [The abstract does not contain sufficient detail for appraisement of the results obtained.]

HARISPE, C. M., & WAINER, I. (1941). La enfermedad de Carré en los parques de aclimatación. **[A Disease resembling Canine Distemper in the Zoological Gardens in La Plata].**—*Rev. Med. vet., B. Aires.* **23.** 492–502. **113**

The authors describe a virus disease affecting young pumas, tigers, and coyotes in the zoological gardens of La Plata. The disease usually ran a very short course and was generally fatal. In all animals affected, the outstanding P.M. features were enlarged spleen and glomerulitis. Bacteriological examinations were un-

successful, but spleen material was capable of infecting pups and kittens.

A formolized vaccine was prepared from infective spleen and proved effective as a prophylactic measure.

[The title of the paper is misleading. The authors, in their résumé, state that the disease was caused by a virus of the same type as that causing canine distemper; no cross-immunity tests were carried out, but the virus caused a distemper-like illness in dogs.]—M. WATSON.

MALBRANT, R. (1942). Pseudo-pest aviaire au Moyen Congo. **[Infection resembling Newcastle Disease in the Middle Congo].**—*Rev. Sci. méd. pharm. vét., Brazzaville.* **1.** 39–49. **114**

In November, 1939, there occurred near Brazzaville an outbreak of a condition with the characters of Newcastle disease, which in a few weeks practically destroyed the stock on numerous poultry farms. It was probably introduced from the Belgian Congo and developed rapidly from July to September until the rains, when it began to diminish, and by December of that year few outbreaks were recorded. The period of incubation was 3–4 days and the disease reached its height usually in 2–3 days, although it was possible for this period to vary from a few hours up to three weeks. Mortality was about 95–100%. Symptoms included shallow respirations, diarrhoea, conjunctivitis with occlusion of the pupils, locomotor incoordination and general dullness. Lesions appeared as petechial haemorrhages on the heart and sometimes on the submucosa of the gizzard with frequent haemorrhagic plaque formation upon the lining of the intestines. There was also congestion of the genital tract and occasionally of the lungs. Catarrhal enteritis was a common feature. Excreta and blood from affected birds were particularly virulent. The comparison of these characteristics with those of the other avian pests shows that the clinical pictures are not identical, although the Congo infection approaches more nearly to Newcastle disease than to any other. It is distinguished by irregularity in onset, benign nature in pigeons, and also by the apparently constant virulence of blood from affected birds. M. therefore provisionally classifies it in the group of avian pseudo-pests to which it most nearly approximates.—J. C. BUXTON.

BEAUDETTE, F. R. (1942). **The Reasons for Failures in Immunization against Laryngotracheitis and Pox.** —*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 127–141. **115**

A general review is given of the position. Failures in immunization are ascribed in turn to wrong diagnosis, the vaccine manufacturer, the licensing agency, and the vaccinator. Examination of a number of commercial fowl-pox vaccines showed great variation in the amount of virus supplied for 100 birds (10–40 mg.). A similar lack of uniformity was noted in the type of brush supplied for application. Examination of commercial avian laryngotracheitis vaccines revealed that lack of potency is common. Of 20 samples tested, eight failed to give "takes" in more than 50% of birds.—D. D. O.

I. DELAPLANE, J. P., & STUART, H. O. (1939). **Studies of Infectious Bronchitis.**—*Bull. R.I. agric. Exp. Sta.* No. 273. pp. 15. **116**

II. DELAPLANE, J. P., & STUART, H. O. (1941). **The Modification of Infectious Bronchitis Virus of Chickens as the Result of Propagation in Embryonated Chicken Eggs.**—*Bull. R.I. agric. Exp. Sta.* No. 284. pp. 20. **117**

I. The authors state that infectious bronchitis is a common respiratory disease in semi-mature and adult birds in Rhode Island. It greatly resembles infectious laryngotracheitis. The greatest loss among mature birds is from lowered egg production, but mortality may be very high in young chicks. Transmission of the disease was possible by inoculating the virus in any part of the respiratory system or peritoneum of susceptible birds. In bacteriological studies only one organism capable of causing bronchitis could be isolated and that only in a growing yeast medium. It is possible, however, that the true causal virus was present in cultures of the organism. Various filtration tests are detailed. Complete recovery from the disease has been shown to leave an immunity for at least a year and no cross-immunity to either laryngotracheitis or infectious coryza could be determined. Certain immunity and neutralization tests are described and a "carrier" stage after partial recovery is shown to persist for about two months. BEAUDETTE'S findings [*V. B.* **7.** 472.] on the reaction of chick embryos to virus inoculation are confirmed.

II. The authors report the serial passage of a Rhode Island strain of the virus of infectious bronchitis through 90 chick embryos, and also that of the 45th generation of Beaudette's B-588 strain which was carried through 80 further passages under similar conditions. Both strains gradually became more lethal to 14-day-old chick embryos until fixed at about the 65th passage. At the conclusion of the passage the R.I. strain was incapable of setting up disease in susceptible chicks when sprayed over them or injected into the bursa of Fabricius, and only mild reactions followed intranasal inoculation. The B-588 strain, however, caused typical symptoms in chicks when similarly tested during the winter months, probably indicating some seasonal influence on the virus [or susceptibility of the chicks]. Survival rates of the virus in the frozen state, at room temperature, and at 50°C. were estimated. —C. V. WATKINS.

WALLER, E. F. (1942). **Isolation of a Filterable Virus from Chickens Affected with "Blue Comb" Disease.** —*Science.* **95.** 560–561. **118**

From the bloodstream of birds acutely affected with "pullet disease" or "blue comb", W. has been able to obtain a filtrable agent growing readily on the chorio-allantoic membrane of developing chick embryos. Chickens injected with infected chorio-allantoic membrane, embryos, or embryonic fluid became depressed and cyanotic within 96 hours. Death has not been produced by such inoculations.

The lesions observed in the inoculated birds are described, and it is stated that if the birds are not killed the lesions tend to disappear by the seventh day after inoculation.

A suspension of faeces and intestinal contents of experimentally infected birds was infectious to other birds *per os*. Filtrates of faeces were infective when injected intraperitoneally, and were capable of infecting chick embryos.

Since the filtrable agent alone did not produce death on inoculation into birds of susceptible age, it cannot be regarded as the sole aetiological agent of this disease.—R. F. GORDON.

RYFF, J. F., & STAFSETH, H. J. (1942). **Pullet Disease. A Cholera-like Disease of Poultry.**—*Vet. Med.* **37.** 294–296. **119**

The authors discuss the aetiology, symptoms, pathology, diagnosis, and treatment of an acute disease of young pullets and turkeys also known as blue comb, X disease, housing disease, etc. The cause of the condition has not been determined and attempts to reproduce it with infectious agents have so far failed. The disease most commonly occurs during summer and

early autumn, and usually in birds 5–7 months of age. Birds in good condition or tending to be overfat, or that have been pushed for production, appear most susceptible.

The onset is sudden, and symptoms consist in cyanosis of the head parts, profuse diarrhoea, coma and death. In less acute cases the birds may live for some time, and die in a comatose condition after showing constipation and distension of the crop with sour-smelling contents. The average morbidity is 21% and mortality 5%.

The common autopsy findings are :– discoloration of skeletal muscles, with fish-flesh-like areas and shrivelling of the breast and thigh muscles, chalky and mottled appearance of the pancreas, shrunken lobulated or ruptured ova, peritonitis, pericarditis, petechiae in the serous membranes and heart, focal necrosis of the liver, and excess of water in the kidneys.

Diagnosis is difficult and depends on the elimination of other infectious diseases which it resembles, such as fowl cholera, fowl typhoid, botulism, and acute pullorum disease, in conjunction with the flock history, time of the year, symptoms, and lesions.

No proved specific treatment is available, but symptomatic treatment is discussed.—R. F. GORDON.

PREIONI, C. (1941). El origen de la parálisis infantil (enfermedad de Heine-Medin). **[Origin of Infantile Paralysis (Anterior Poliomyelitis)].**—*Bol. téc. Direcc. gen. Agric. Ganad., B. Aires.* Secc. ganad. No. 4. pp. 169–182. **120**

One of the author's children contracted infantile paralysis and he reports that prior to the illness the child had contact with fowls that were affected with a paralytic disease with clinical features resembling those of infantile paralysis.

He speaks of a bird "louse", which he calls "*Dysmanisium avis*", as being a transmitter of both diseases, but gives no evidence for this statement. [The syndrome in the fowls appears to be that of fowl paralysis. No evidence is given that the infection in the child was due to contact with the fowls.]—M. W.

PINKERTON, H. (1942). **The Pathogenic Rickettsiae with Particular Reference to their Nature, Biologic Properties, and Classification.**—*Bact. Rev.* **6.** 37–78. **121**

The classification and biological relationships of rickettsiae are discussed, and it is considered that the nonpathogenic organisms of arthropods are not sharply differentiated from symbionts, and as most of them have been described as rickettsiae purely on the basis of morphology and distribution, their real nature is uncertain, and accurate classification must await methods of studying their biological properties.

As regards pathogenic rickettsiae, the orthodox view is accepted that they are intermediate between the bacteria and viruses, and have become purely intracellular parasites. They are said to be smaller than protozoa and to lack the internal structure associated with these organisms. It is suggested that they should be considered as members of a bacterial family, the Rickettsiaceae, which may be divided into genera. The organisms of specific conjunctivitis and psittacosis are excluded from the family as development in insect tissue has not been established, and more studies should be carried out on the parasites of monocytes, *R. canis*, *R. ovina*, and *R. bovis* before it is decided whether they should be grouped as rickettsiae.

The organisms discussed include *R. prowazeki*, *R. wolhynica*, *R. burneti*, *R. ruminantium*, *R. tsutsugamushi*, *R. canis*, *R. ovina*, *R. bovis*, and *Dermacentroxenus rickettsi*. The last is placed in a separate genus owing to its intranuclear habitat, and to the large lanceolate forms which develop in cultures. *Boutonneuse* fever and South African tick-bite fever are considered to be caused by strains of *D. rickettsi*.

The size of the various organisms, their morphology, filtrability, cultivation, pathogenicity, viability, and immunological properties, as well as the chemotherapy of the diseases which they cause, are discussed.

In respect to size and filtrability it is pointed out that *R. burneti* is a filter passer, but that in the case of the majority of these organisms there has been failure in attempts at filtration, which may possibly be due to their low power of survival under conditions of filtration. As regards cultivation, it is claimed that rickettsiae only multiply within cells, and that they grow best in cells which are metabolizing slowly; thus they differ from viruses, which require actively multiplying cells. Viability depends, as in viruses, on conditions which tend to preserve the integrity of the cytoplasm of the host cells, and is thus favoured by cold and glycerin.

Whilst in some species one attack of disease confers a lasting immunity, in other species immunity develops slowly and appears to be of the nature of a tolerance (trench fever, heartwater). The preparation of vaccines is discussed, vaccines from yolk-sac cultures having given successful results in some cases, and vaccines made from infected arthropods in others. Chemotherapy has not yielded much promise of success.

—U. F. RICHARDSON.

FINDLAY, G. W. M. (1942). **Control of Rickettsias. Immunisation against Infection.**—*Lancet.* **242.** 483–484. **122**

A brief review is given of the methods of immunizing human beings against exanthematic typhus, and it is pointed out that live vaccines have been criticized as giving too severe a reaction in Europeans, whilst in Africans their value has been obscured by insufficient data as to the immunity of the vaccinated population.

It has been claimed that the use of killed vaccines has given good results in immunization, but the difficulty has been to produce such vaccines on a large scale. The fact that a variety of rickettsiae can be adapted to the mouse lung and to the developing chick embryo justifies a hope that this problem of large-scale production may be overcome.—U. F. RICHARDSON.

IMMUNITY

KARADY, E. S. (1941). **Histamine Tolerance and Anaphylactic Death in Sensitized Guinea-Pigs.**—*J. Immunol.* **41.** 1–13. **123**

Subcutaneous injection of g. pigs with 2·34 g. of histamine per 100 g. body weight over a period of 4–8 weeks was found to double the intracardiac and subcutaneous dose of histamine tolerated. Treatment for 3–4 weeks, beginning with relatively large doses (0·1 mg. per 100 g. body weight), produced a mortality of 60%. 75–90% of g. pigs, sensitized to horse serum, were protected against death from anaphylaxis by pretreatment with histamine, and the pre- and post-sensitization method proved most efficient. Pretreatment with histamine did not significantly protect g. pigs, sensitized to egg-white, against death from anaphylaxis.—R. O. MUIR.

REINSTORF, A. (1942). Aendert das Gefrieren von

Impfstoffen ihre Wertigkeit? [**Does the Freezing of Biological Products Affect their Value?**]—*Tierärztl. Rdsch.* **48.** 124–125. **124**

German veterinarians are prejudiced against the use of sera thawed after previous exposure to low temperatures, and this was especially the case in eastern Europe during the severe winter of 1941–1942. Owing to its immediate practical importance, the problem was investigated by subjecting swine erysipelas serum of known potency to –18°C. for 12 hours and subsequently thawing at room temperature. A fraction of the thawed serum was refrozen at –25°C. for 12 hours and rethawed. A portion of the latter serum was again subjected to low temperatures, this time ranging between –20°C. and –35°C., over a period of five days. Unfrozen control serum and the once, twice, and three times frozen sera were tested on white mice inoculated with *Erysipelothrix rhusiopathiae* cultures of moderate virulence. At the same time, other mice were inoculated with 0·01 ml. of a broth culture that had been exposed to –20°C. for 12 hours. There was neither any appreciable difference between the effectiveness of unfrozen and of thawed sera, nor between the degree of virulence of unfrozen and of thawed cultures.—J. H. KENNETH.

LANFRANCHI, F. (1942). Ricerche comparative del potere immunizzante dei comuni antigeni microbici nei confronti degli antigeni glucido-lipidici degli stessi germi. [**Immunizing Power of Common Bacterial Antigens Compared with that of Glyco-Lipoid Antigens of the Same Organisms**].—*Boll. Soc. ital. Biol. sper.* **17.** 158–160. **125**

Experiments on small numbers of " animals " with *Salmonella typhi-murium* and *Pasteurella septica* indicated that vaccines prepared from the whole bacteria conferred a stronger immunity (as measured by survival time after lethal infection) than glyco-lipoid antigens of the same strains.—J. E.

See also absts. **21, 22, 31, 36, 81, 86, 111, 122, 140, 195, 201.**

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

I. SCHMID, F. (1941). Ueber die Biologie der Dasselfliege. [**Biology of Ox-Warble Flies**].—*Dtsch. tierärztl. Wschr.* **49.** 313–316. **126**

II. GÖTZE, R. (1941). Die Bekämpfung der Dasselfliege. [**Control of Ox-Warble Flies**].—*Ibid.* 316–318.

I. S. gives a résumé of the work done to determine the life-cycle of the flies. **127**

Experiments in which embryonated eggs and hatched larvae were fed to cattle did not result in the spread of larvae through the body tissues. S. found only the larvae of *H. lineatum* in the pharyngeal mucosa and only the larvae of *H. bovis* in the spinal canal, consequently it must be assumed that the larval migration is different for the two species. Penetration of the larvae through the tissues is facilitated by the production of a toxin which has a lytic action on the tissues and which may also be responsible for the production of warble anaphylaxis. The larvae moult three times during their migrations to the back. The emergence of the mature larvae from the skin is aided by the animal's stretching itself. Under optimal conditions pupation may be completed in 17 days. Adult flies emerge in the bright sunshine of early afternoon. Numbers of the sexes are about equal.

II. G. summarizes the difficulties connected with control of the flies. He suggests that new methods of control be given consideration, such as mobile pens and dips, the search for a drug that will kill the early stages of the larvae in the tissues, special attention to the protection of youngstock since it has been observed that they are especially heavily infested, and even the housing of youngstock until they are two years old.—A. L. W.

See also abst. **74.**

LEWIS, E. A. (1942). **Tsetse-Flies and Development in Kenya Colony. Part I.**—*E. Afr. agric. J.* **7.** 183–189. **128**

An account is given of the species of tsetse flies occurring in Kenya colony, their distribution, breeding and feeding habits, and their influence on soil erosion and agriculture. It is pointed out that fly belts are zones of different dimensions, irregular in shape, with localities that are either fly-free or only occasionally infested, and that tsetses have their permanent haunts from which they disperse when conditions outside are favourable and to which they return in adverse seasons. A complete tsetse survey has never been undertaken systematically in Kenya, but there is evidence that fly encroachment has occurred, and that this advance has forced the people into more and more congested areas.

It has been suggested that tsetse flies have saved much of Africa from soil erosion by preventing the maintenance of an excessive stock population, but that in other areas they have contributed to soil erosion by causing congestion of human beings and stock. It is argued that the view which accepts an injurious pest in the guise of a protector of the country favours the surrender of trusteeship to an agency which hinders development and which is continually threatening to take possession of additional land. Modern thought tends to favour attempts to bring more land into use, by controlled cultivation and clearing to restrict tsetse-infested areas, and even to free them from fly, so that stock can be reintroduced into them.—U. F. R.

JACK, R. W. (1941). **Further Studies in the Physiology and Behaviour of** *Glossina morsitans*, **Westw.**—*Mem. Dep. Agric. S. Rhod.* No. 3. pp. 56. **129**

Records are given of the temperature, humidity, and evaporation rates at various observation posts in tsetse-infested areas in Rhodesia, and it is tentatively suggested that the critical mean temperature admitting of permanent " fly " infestation is in the neighbourhood of 68°F.

Further records are given of the weights of flies and pupae, the ratio of water to non-fatty solids, and the fat content. The importance of the non-fatty solids and their rise in proportion to the number of meals taken are stressed, and it is pointed out that further information is required as to their nature. Records are also given of the percentages of young male and young female flies in the total catches on different attractants.
—U. F. RICHARDSON.

*LOHMANN, R. (1941). Stand der Simuliidenforschung und Beitrag zur Immunitätsfrage. [**Position of Research on Simuliidae. Immunity Problems**].—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 274]. **130**

Of the 150 known simuliid species, 15 are found in the region between the rivers Leine and Aller, the most severely infested region of Germany. *Simulium sericatum* and *S. ornatum* are here the most dangerous species. The females assemble in great swarms and attack cattle, and in young calves a poison contained in the insect's saliva frequently causes death. Older animals seem to be resistant to the poison. Experiments on g. pigs confirm the supposition that immunity can be acquired against this toxic substance.—E. R. PARISER.

KUSCHER, A. (1940). Raubmilben beim Hund.

[*Cheyletiella parasitivorax* **in Dogs**].—*Wien. tierärztl. Mschr.* **27.** 10–16. **131**

In a six-month-old dog with the squamous form of demodectic mange, the affected areas were surrounded by a yellowish-red zone, 5 mm. broad and raised above the level of the normal skin. This peripheral zone contrasted strongly with the completely bald, firm, dry, blue-grey central zone.

Deep scrapings from the entire lesion revealed *Demodex* in the central zone and *C. parasitivorax* in the peripheral zone, males, females, and larval stages being seen. Histological examination of a piece of skin revealed two entirely different lesions. The appearance of the central zone was typical for squamous demodectic mange, while the peripheral zone revealed acute dermatitis with acanthosis and intense inflammation of the epidermis and papillary bodies.

The *Cheyletiella* mites were localized in the mange lesions and thorough examination of other parts of the dog's epidermis failed to reveal any mites. An interesting biological control phenomenon was observed since the *Cheyletiella* lived by feeding on the *Demodex*. K. suggests that many of the cases of spontaneous cure observed in demodectic mange may be due to this.

The dermatitis caused by *Cheyletiella* disappeared when the mites died. Treatment with akarusan (a carbon disulphide preparation) killed both species.

See also absts. **99, 102-106.** —A. L. WILSON.

PARASITES IN RELATION TO DISEASE [HELMINTHS]

CYTLAK, K. (1942). Zur Untersuchung der Schweine auf Finnen. [**Examination of Pigs for Cysticerci**].—*Z. Fleisch- u. Milchhyg.* **52.** 73. **132**

C. refers to a case of severe infestation which was not disclosed by the regulation meat-inspection examination, but was revealed by an incision in the cervical muscles. He recommends that such an incision should be made during inspection of all swine coming from Eastern European areas, where the incidence of swine cysticercosis is heavier than in Germany.

—A. L. WILSON.

MÜLLER. (1942). Zur Untersuchung der Schweine auf Finnen in den Ostgebieten. [**Examination of Pigs for Cysticercosis in the "Ostgebieten" (Poland)**].—*Z. Fleisch- u. Milchhyg.* **52.** 121–122. **133**

M. comments on the article by Cytlak [see preceding abst.]. From 1910–1925 he was in charge of meat inspection at the abattoir at Kattowitz (Poland). The German regulations in force during that period for detection of measled pork demanded inspection of the tongue, larynx, and abdominal muscles, and incisions had to be made in the heart, and in the neck and psoas muscles. This examination was very necessary as 2% or more of pigs imported from Russia, Rumania, and Serbia were infested with cysticereci. Pigs from Germany and Austria were practically free.

Butchers often attempted to evade the regulations by removing superficial cysts from the tongues of the live pigs; hearts showing more than the one incision necessary to drain the blood were open to suspicion, and a careful inspection usually showed the carcass in question to be infested.—H. E. HARBOUR.

BARNETT, L. (1939). **Hydatid Disease: Errors in Teaching and Practice.**—*Brit. med. J.* Sept. 16th. 593–599. **134**

The paper concerns the difficulties involved in the diagnosis of hydatid disease in human beings, chiefly from the surgical aspect. B. emphasizes the fact that human cases usually originate from the handling of dogs, and seldom from the eating of raw green foods which have been contaminated by dogs.—M. L. B.

SCHMID, F. (1942). Zur Methodik des Trichinennachweises in der Fleischuntersuchung. [**Technique of Examination of Pig Carcasses for Trichinae**].—*Z. Fleisch- u. Milchhyg.* **52.** 73–76. **135**

S. criticizes the compressorium and biological test methods for diagnosing trichinosis and describes experiments to find a good tissue-digestion technique. A fluid consisting of 0·9% pepsin and 0·7% HCl digested infested g. pig flesh in 20 hours, though some of the larvae were destroyed in the process. When the compressorium and digestion techniques were compared by using the same piece of flesh for both tests, it was found that 4,556 larvae were revealed by the compressorium and 7,520 were recovered by digestion.—A. L. WILSON.

GLAMSER, F. (1942). Ueber die Ursache einer Trichinoseepidemie. Trichinennachweis mit der Salzsäure-Pepsinanreicherung. [**Causes of an Outbreak of Trichinosis. Diagnosis by HCl-Pepsin Enrichment**].—*Berl. Münch. tierärztl. Wschr.* June 26th. 198–200. **136**

G. describes an outbreak of trichinosis affecting 17 persons traced to the eating of raw sausage which had not been subjected to inspection. Examination of portions of the sausage did not yield any result by direct methods but the HCl-pepsin enrichment method [see preceding abst.] demonstrated the presence of trichinae.

G. points out the dangers of increased trichinosis infection in Germany in war-time; a similar increase occurred in the last war and was due, according to VON OSTERTAG, to the eating of uninspected meat in the occupied countries of the East. Before the present war the percentage of infested carcasses in the Warsaw district was 0·08 while that in Germany in 1928 was only 0·0013.

G. points out the necessity for a wider application of inspection in slaughterhouses in the occupied countries in order to lessen the risk of trichinosis. He regards the HCl-pepsin enrichment method as a very useful one which should be more widely used, especially in examining meat products suspected of being the cause of outbreaks of human trichinosis.—H. E. HARBOUR.

KOLBE, F. (1942). Spontane Trichinose bei Tieren. [**Spontaneous Trichinosis in Animals**].—*Z. Fleisch- u. Milchhyg.* **52.** 99–101. **137**

Little has been written about the clinical manifestations of cases of trichinosis in animals. K. discusses this aspect of the subject, giving a number of references.

—H. E. HARBOUR.

I. MATOFF, K. (1941). Experimentelle Trichinellen-infektion der Trachea und Nasenhöhle. [**Experimental Trichina Infection of the Trachea and Nasal Cavities**].—*Arch. wiss. prakt. Tierheilk.* **76.** 363–377. **138**

II. MATOFF, K. (1941). Experimentelle peranale Infektion mit Trichinella Spiralis. [**Experimental Peranal Infection by** *T. spiralis*].—*Tierärztl. Rdsch.* **47.** 349–351 and 357–361. **139**

I. Injections of muscle trichinae into the trachea and nasal cavities of rabbits, g. pigs, dogs and puppies, pigeons and squabs, and a young cat showed that the worms can develop normally there, reach full maturity, and reproduce; the embryos reach the skeletal muscles *via* the lymph system. Infection of the trachea of adult dogs and pigeons was not successful, due apparently to age immunity. Only a small proportion of the injected

trichinae develops to maturity in the trachea and nasal cavities as many of the worms are swallowed and others are destroyed by phagocytosis in the bronchi and nasal cavities. As sexually mature trichinae were found free in the nasal and tracheal mucus, it may perhaps be concluded that it is not absolutely necessary for the worms to penetrate the mucosa in search of food, oxygen, etc., as they are known to do in their usual habitat, the intestine. This question needs further investigation. All the results confirmed McCoy's (1936) experiments on the development of *T. spiralis* in chicken and rat embryos, it being again shown that the nematodes are capable of developing in unusual habitats.

II. Further experiments with g. pigs, rabbits, and a young cat showed that peranally and intrarectally injected muscle trichinae can develop directly in the rectum and colon and reach full maturity there. Age immunity of the dog was again observed in these experiments. More trichinae were observed in the anal than in the caecal regions. Trichinae which have been introduced *per os* reach the large intestine mostly as mature animals, having developed to maturity in the small intestine.—E. R. Pariser.

*Gaase, A. (1941). Die serologische Diagnose der Trichinose mittels der Komplementbindungs- und Präzipitationsreaktion. [**Serological Diagnosis of Trichinosis by Complement-Fixation and Precipitation Reactions**].—*Münch. med. Wschr.* 473–474. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **140.** 278]. **140**

Serum samples from persons infected with trichinosis were tested with an antigen preparation. Complement-fixation and precipitation reactions were employed; in the former method the serum was diluted 1 : 2 and 1 : 3; for the latter the solution was diluted in the proportion 1 : 2. As complement, g. pig serum was used in a 1 : 10 dilution. Sera of 27 trichinous patients who had first exhibited pathological symptoms 2½–3 months before examination, all gave definitely positive results with both reactions. Twenty-three samples from healthy persons and patients suffering from other diseases all gave negative results. The suitability of the two reactions for early diagnosis was not determined. —E. R. Pariser.

Threlkeld, W. L., & Johnson, E. P. (1942). **Control of the Hog-Kidney Worm** (*Stephanurus dentatus*).—*Amer. J. vet. Res.* **3.** 72–76. **141**

A method evolved a few years ago by the U.S. Bureau of Animal Industry for the control of the swine kidney worm has proved rather too intricate for many farmers to carry out. A simplification of this plan was tested but was not effective. Some pigs were given small daily amounts of phenothiazine in the feed in an attempt to destroy *S. dentatus* larvae migrating to the liver *via* the portal vein, but these results were again not encouraging. *In vitro* experiments were, however, carried out to determine the effect of phenothiazine on the eggs. The results showed that treatment of the faeces with phenothiazine interfered with egg development and prevented the larvae from reaching the infective stage. The oxidation products of phenothiazine, phenothiazone and thionol, also had an inhibitory effect upon larval development. As possible control measures the authors suggest (1) sprinkling small quantities of phenothiazine on floors, troughs, etc., and (2) repeated dosage of sows during the suckling period with the object of causing excretion of oxidation products in quantities sufficient to prevent any eggs becoming infective for young pigs.—M. L. Bingham.

*Wagner, O. (1941). Enzootisches Sterben in einem Taubenschlag verursacht durch den Taubenspulwurm Ascaridia columbae. [**Losses in a Pigeon Loft due to *A. columbae* Infestation**].—*Vet.-med. Nachr. Bayer-Meister Lucius.* No. 1. pp. 1–10. [Abst. from abst. in *Tierärztl. Rdsch.* **48.** 52]. **142**

An account of treatment of an affected flock with ascaridol.—A. L. Wilson.

See also abst. **214**.

DISEASES, GENERAL

*Sylvest, O. (1941). Nogle smitsomme Husdyrsygdommes Saesonvariation. [**Seasonal Variations in Some Infectious Diseases of Domestic Animals**].—*Maanedsskr. Dyrlaeg.* **53.** 441. [Abst. from abst. in *Skand. VetTidskr.* **32.** 290 and 293–294]. **143**

Herpes [? ringworm] appears in cattle mainly during the dark winter months, but shows no seasonal variation in the pig. Calf diphtheria and swine fever are most prevalent in December to May. Purpura in horses appears in late autumn and reaches its maximum between February and April. Cow pox is most common from July to November, and blackleg and swine erysipelas are seen mainly in the summer months.

Hogreve, F. (1942). Alter und Gesundheits- bzw. Krankheitsverhältnisse des Versuchstiermaterials. [**Age in Relation to Health and Disease in Animals**].—*Züchtungskunde.* **17.** 10–26. **144**

TB. lesions were found in 35·4% of 448 carcasses of 270 Lowland and 178 Upland cattle slaughtered at five abattoirs, as compared with 24·1% recorded in Germany in 1938. The incidence in bullocks was 40·0%, bulls 20·8%, cows 31·9%, and heifers 22·8%, or in 31·0% of a total of 206 male and 39·1% of 242 female animals. Breed differences were not statistically significant. The rate ranged from 32·4% of carcasses graded AA to 56·6% of grade D. The incidence of mastitis, 13·8%, showed no correlation with carcass grade. 13·1% of all animals had liver flukes, cattle of Upland breeds being particularly affected. Only 50·5% of all carcasses could be classified as being entirely sound. The results and implications of this enquiry are discussed in some detail. The discussion concerning age in relation to health is of a general nature only.—J. H. Kenneth.

*Kriebel, G. W. (1940). Ueber den Calciumspiegel im Blutserum chirurgisch kranker Pferde. [**Calcium Content of the Blood of Horses with Surgical Diseases**].—*Inaug. Diss., Leipzig.* pp. 44. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 8]. **145**

The serum-Ca level of 37 horses under treatment for wounds, injuries, quittor, fistulous withers etc. was determined, but no change in the level was observed during the course of the various conditions.—M. L.

*Antal, I. (1940). [**Potassium Content of Horse Blood**].—*Közl. Összehas. élet- és kórtan Köréből.* **29.** 192–193. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 326]. **146**

*Keller, F. (1940). Der Kaliumgehalt des Blutserums von chirurgisch kranken Pferden. [**Potassium Content of the Blood of Horses with Surgical Diseases**].—*Inaug. Diss., Leipzig.* pp. 35. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 9]. **147**

I. Whole blood K values of ten samples from horses averaged 184·73 mg.% and serum K values of 30 samples averaged 20·7 mg.%. These values remained constant for at least 24 hours. As distinct from this,

the K values of horse plasma from oxalated or citrated whole blood, begin to increase within two hours on standing, as additional K enters the plasma from the corpuscles. This rise is greater in oxalated than in citrated blood.

II. The serum-potassium level of 31 horses with various surgical affections was determined by Kramer and Tisdall's method. In acute inflammatory conditions and where pus formation was active, the K values fell considerably, but in affections accompanied by marked oedema there was an increase. In subacute or chronic conditions no change was observed.

The variations in the serum-K level did not form a reliable indication of the gravity of any particular case. —M. LANDAU.

THORP, F., Jr. (1942). **Some Diseases of Feedlot Lambs.**—*Cornell Vet.* **32.** 119–126. **148**

Diseases incidental to "shipping" are of importance since lambs in America are often shipped at least three-fourths of the way across the Continent to be fattened.

Paratyphoid dysentery. Outbreaks studied by NEWSOM & THORP, Jr. (1938) were caused by *Salmonella typhi-murium*, the predisposing cause being hunger due to "shipping" delays. The disease is a gastro-enteritis, outbreaks appearing suddenly and pursuing a rapid course. Treatment by isolation of affected animals and individual symptomatic treatment is advised.

Coccidiosis of feeder lambs usually developed 2–3 weeks after arrival in feedlots. The parasite concerned was *Eimeria arloingi*. Bloody diarrhoea, depression, and loss of appetite were the chief symptoms. Mortality may be high in the first few days of an outbreak. Prevention by avoiding overcrowding the lambs in the first 2–3 weeks or by the provision of deep bedding for "dry lots" is advocated.

Sore mouth (contagious ecthyma) was prevalent. Though not itself causing serious mortality, secondary invaders (*e.g. Fusiformis necrophorus*) sometimes caused serious trouble. Necrotic lesions might be found on the tongue, hard palate, and larynx, throughout the alimentary tract, and occasionally in the lungs. Preventive vaccination gave satisfactory results. Vaccine prepared from scabs from typical cases was applied to a scratch on the skin of the inner surface of the thigh. Lambs could be vaccinated within a few days of arrival. Vaccination was safe, even if infection was already present.

Enterotoxaemia was the most serious disease of lambs on feedlots. Death was due to an enterotoxaemia following overfeeding with grain. The toxin was neutralized by *Clostridium welchii* antitoxin Type D. Symptoms and P.M. lesions were similar to those seen in cases of pulpy kidney disease in the United Kingdom. Prevention by careful management and feeding was effective.—H. E. HARBOUR.

FRAUCHIGER, E., HOFMANN, W., & SCHMID. (1942). Über infektiöse Lämmerlähmung. **[Infectious Paralysis of Lambs].**—*Schweiz. Arch. Tierheilk.* **84.** 173–177. **149**

The authors examined *ante* and *post mortem* three young lambs from a flock in which eight had died after a few days' progressive paralysis. The three lambs showed first a stilted gait and then passed into a state of general paralysis from behind forwards. Insufficient cerebrospinal fluid was obtainable for a detailed examination, but it was possible to demonstrate a great cell increase.

P.M. examination revealed melanosis of the pia mater and a grey-red jelly-like mass in the lumbar subdural space. Microscopically the essential feature was a serous lymphocytic leptomeningitis.

This disease resembles one described in 1920 by MAGNUSSON. The cause is as yet unknown.—J. E.

LENTZ, R. W. (1941–42). Die Schweinekrankheiten im Schrifttum der Jahre 1939 and 1940. (Kritisches Sammelreferat). I. Seuchen. II. Sporadische Krankheiten. **[Critical Review of the Literature of 1939 and 1940 on Pig Diseases. I. Infectious Diseases. II. Sporadic Diseases].**—*Berl. Münch. tierärtzl. Wschr.* Dec. 12th. 593–598, and Jan. 23rd. 27–29. **150**

This review follows the lines of L.'s review for 1938 [*V. B.* **12.** 164]. The following are the chief conditions included. *Infectious diseases* :– porcine encephalomyelitis, swine fever, Aujeszky's disease, piglet influenza, swine erysipelas, snuffles, and pox-like exanthema. *Sporadic diseases* :– liver changes associated with cod liver oil feeding, helminthiasis, sudden heart failure, intestinal polypi, mastitis, piglet mortality, nutritional diseases, poisoning, and malformations. —J. Z.

—. (1941). **[Report of Committee on] Poultry Diseases.** —*J. Amer. vet. med. Ass.* **99.** 448–451. **151**

A number of the new developments in poultry disease research are reported. The most important of these are :– (1) The high efficiency of phenothiazine in the control of blackhead in turkeys, due to its high anthelmintic efficiency against *Heterakis gallinae*. (2) The use of sulphathiazole in the prevention and treatment of infectious coryza. (3) The promise shown by lead arsenate, and organic and inorganic tin compounds, as taeniacides in poultry. (4) The value of aqueous colloidal sulphur, flowers of sulphur, and sulphaguanidine, in the prevention of coccidiosis. (5) Advancements in the knowledge of poultry nutrition which have resulted in contributions to the control of deficiency diseases. Six of these are enumerated.

Five important points in the control of infectious laryngotracheitis, and changes in the pullorum-testing section of The National Poultry Improvement Plan, are described.

The committee reports that, by the use of extension courses, progress has been made in securing greater interest among veterinarians in the control of poultry disease. It has also sponsored the distribution of a 50-page bulletin on the diseases of poultry, this being a reprint of the proceedings of the symposium on poultry diseases presented at the 44th Annual Meeting of the U.S. Live Stock Sanitary Association, 1940. Three further recommendations are offered.—R. F. GORDON.

JECKSTADT. (1942). Erfahrungen mit der Fütterung von ungedroschenem ukrainischem Weizen. **[Experiences in the Feeding of Unthrashed Ukrainian Wheat to Horses (Mouth Injury)].**—*Z. Veterinärk.* **54.** 125–128. **152**

Of 246 army horses which were fed on Ukrainian wheat, ten developed various oral lesions which were due to the wheat-ears' husks piercing the mucosa of the lips, cheeks, soft palate, and periodontal tissue and becoming lodged in the deeper tissues. Seven of the affected horses responded to active surgical treatment; the other three animals could not be saved, but died or had to be destroyed because of their inability to take or swallow food.—M. LANDAU.

*ROMBOLI, B. (1940). Degenerazione grassa a focolai in fegato di cavallo. **[Focal Fatty Degeneration of the Liver in the Horse].**—*Azione vet.* **9.** 463–467. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 177]. **153**

This condition is recorded as occurring in the horse.

The case is described in detail and the pathogenesis discussed.—M. LANDAU.

BUCHBINDER, L. (1942). **The Transmission of Certain Infections of Respiratory Origin. A Critical Review.** —*J. Amer. med. Ass.* **118.** 718–730. **154**

During the past eight years considerable progress has been made in the study of the spread of respiratory infection by air-borne particles and of their control by physico-chemical methods. B. has reviewed in detail 98 recent papers on the subject.

There is a general section on laboratory studies of various aspects of air-borne infections demonstrating that such common pathogens as the streptococcus and pneumococcus may persist in air and maintain their virulence for long periods: moreover, a similar phenomenon may occur with some viruses.

Confirmation of the spread of infection by air-borne droplets has been obtained from clinical studies in hospital wards containing patients suffering from scarlet fever, pneumococcal infections, diphtheria etc.

B. suggests that the validity of the air-borne hypothesis of respiratory infection can be assessed by a "therapeutic test", by which he means that measures that rid the environment of micro-organisms should also reduce the incidence of respiratory infections. The prophylactic methods which are discussed in detail are the use of ultra-violet light, and reduction of dust by suitable physico-chemical methods and by chemical sprays.

The article is of particular value for purposes of reference.—R. E. GLOVER.

LENKE, S. E., & LOEWE, L. (1941). **Cardiac Lesions Resembling Aschoff Bodies in Mice.**—*Amer. J. Path.* **17.** 857–860. **155**

A spontaneous pancarditis, resembling that found in rheumatic fever in man, was observed in mice during experiments in which the animals were given intracerebral inoculations of material from the hearts of patients dying of rheumatic fever. In 203 inoculated mice the incidence of cardiac lesions was 29·5% and in a group of 60 normal control mice the incidence was 32·8%: the severity of the process was similar in the inoculated and control groups. No evidence was obtained to suggest that the condition was in any way related to the experimental procedure. The authors have previously described a similar condition occurring spontaneously in the rabbit, although in these animals it was associated with an acute epizootic.

The various lesions found included bland vegetations on the heart valves, myocardial foci which were often perivascular and contained "owl-eyed" cells similar to those seen in rheumatic fever, varying degrees of arteritis and peri-arteritis, and mononuclear foci in the pericardium. No organisms could be demonstrated in the heart, either by cultural methods or in stained sections.—E. G. WHITE.

LASZLO, F. (1942). Schwund des Hirnanhanges bei einem Kalb. **[Pituitary Atrophy in a Calf].**—*Tierärztl. Rdsch.* **48.** 188. **156**

Examination of a stillborn calf affected with hydrocephalus revealed that the brain tissue consisted of mere shreds. Of the pituitary body, the posterior and intermediate parts were intact, but the anterior part showed cystic degeneration and pressure atrophy resulting from the pre-existing hydrocephalus.—M. L.

*HOLMBOE, F. V. (1942). Et utbrudd av toksisk haemoglobinuri hos storfe. **[An Outbreak of Toxic Haemoglobinuria in Cattle].**—*Norsk VetTidsskr.* p. 27. [Abst. from abst. in *Skand. VetTidskr.* **32.** 378 and 379]. **157**

On a single farm in an area known to be free from piroplasmosis, three cattle developed a condition characterized by haemoglobinuria. Two died within three days and the third had to be slaughtered. The remaining animals were confined to, and fed in, the sheds and no further cases occurred. The attack occurred during the first nine days of September after a period of heavy rain. H. suggests that a poison was the cause of the illness but no evidence is given to support this belief.—G. B. BROOK.

DIMOCK, W. W. (1942). **Equine Breeding Hygiene.** —*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 51–58. **158**

Examination of 4,000 barren mares showed streptococcal infection of the genital tract in 25%. In 10%, *Bacterium coli*, staphylococci, encapsulated bacilli, or *Pseudomonas pyocyanea* were found. No bacilli were found in the remaining 65%. Examination of aborted foetuses and of foals which had succumbed to navel-ill and joint-ill revealed streptococcal infection in 18 and 25% respectively. It is concluded that streptococcal infection is the most serious problem of equine breeding. The hygienic and other measures which can be employed to deal with the problem are discussed at some length. The general features and treatment are also described of streptococcal abortion, salmonella abortion, and virus abortion in mares, and of streptococcal infection, *Bacterium equirulis* infection, *Salmonella abortus-equi* infection and *Corynebacterium equi* infection of foals.—D. D. OGILVIE.

SPIERLING. (1942). Von der Unfruchtbarkeit bei Kühen und ihrer Behandlung. **[Sterility in Cows and its Treatment].**—*Tierärztl. Rdsch.* **48.** 201–202. **159**

A general paper of small scientific value. A few points of interest are mentioned. In one big dairy herd sterility was responsible for 46% of the annual wastage in animals. S. believes that an excess of potatoes in the diet may cause cystic ovaries. Uterine irrigation is advocated in cases of chronic metritis.

S. makes the significant statement that, in his opinion, out of 300 veterinarians practising in the province of Brandenburg, 15 only are able competently to treat sterility in cows.—M. LANDAU.

SAWIN, P. B., ANDERS, M. V., & JOHNSON, R. B. (1942). **"Ataxia", a Hereditary Nervous Disorder of the Rabbit.**—*Proc. nat. Acad. Sci.* **28.** 123–127. **160**

A nervous disorder, characterized by ataxia of the hind legs associated with demyelinated areas in the medulla, is described in a family of Chinchilla rabbits in which parent-offspring inbreeding had been practised for at least five generations. One female from a litter of six, which appeared entirely normal at birth, developed paralysis of the hind legs at two months of age and died after two weeks in an emaciated state. The other two females of the litter, when mated back to the father after reaching maturity without abnormality, produced in their first litters young which developed identical symptoms at the same age. Details are given of the course of the disease and of the P.M. results. The onset of symptoms varied from 8–13 weeks of age and the duration from 5–27 days.

Results of mating known heterozygous male and female carriers, which produced 55 affected offspring from a total of 219, suggested that the condition was hereditary and involved the transmission of a sublethal recessive character which appeared to have arisen by a mutation. By crossing, it could be introduced into unrelated and unaffected families, becoming manifest in subsequent generations. A comparison is made with similar conditions in the pigeon and the dog.—R. O. M.

NUTRITIONAL AND METABOLIC DISORDERS

*ENDER, F. (1942). Undersøkelser over slikkesykens etiologi i Norge. [*Slikkesyken* **in Ruminants in Norway**].—*Norsk VetTidsskr.* p. 3. [Abst. from abst. in *Skand. VetTidskr.* **32.** 378]. **161**

Slikkesyken, the local name for a disorder in Norway, usually attacks cattle and sheep. Two types of the disease are found. The first is associated with a low copper content and the second with a low P_2O_5 content of the hay used as fodder. The type depending on low Cu content occurs in many coastal districts. Hay in these areas contains 1·5–2·5 mg. Cu per kg. while hay from normal areas contains 7·5–12 mg. Young cattle and calving cows are especially susceptible from the end of the year until the following spring. The symptoms comprise inappetence, cessation of growth, loss of weight, "staring" coat, and in adult females the absence of oestrus. Treatment consists of giving $CuSO_4$; cattle receive 0·8 g. for four days, 0·4 g. for a further four days, and thereafter 0·2 g. per day. Adult sheep are given 0·2 g. on alternate days, and lambs receive 0·2 g. every third day. Of 822 affected animals [species not defined] 82% recovered.

Slikkesyken caused by low P_2O_5 content occurs in certain inland wooded areas. The hay has a high Ca : P ratio and a P_2O_5 content of 0·1–0·2%, while hay from normal areas contains at least 0·4%. Cattle are given 30–50 g. sodium phosphate daily; sheep 10–15 g. and lambs 5–10 g. Results of this treatment alone are not given but 82% of 203 affected animals recovered when treated with both Cu and phosphate. [Symptoms are not described in the case of the *slikkesyken* caused by P deficiency and it is not clear from the Swedish abstract if both types of *slikkesyken* have the same symptomology. *Bleksoten* is the Swedish name used in this abst. for *slikkesyken*.]—G. B. BROOK.

See also absts. **267–269.**

CHORNOCK, C., GUERRANT, N. B., & DUTCHER, R. A. (1942). **Effect of Manganese on Calcification in the Growing Rat.**—*J. Nutrit.* **23.** 445–458. **162**

Observations are recorded on the influence of high and low dietary levels of manganese on calcium and phosphorus metabolism in young growing rats. Low Mn intakes, comparable to those found effective in correcting perosis in chicks, showed little or no effect on bone calcification either in conjunction with normal or with rachitogenic diets. High intakes of Mn (0·31–1·73% of the diet) intensified the abnormal C : P metabolism induced by rachitogenic diet employed. In particular, faecal excretion of P was greatly increased, sometimes exceeding the dietary intake. The adverse effects of the high Mn intakes were less evident in the presence of supplements of cod liver oil, potassium phosphate, and potassium citrate.—W. R. MUIR.

DANIEL, E. P., & HEWSTON, E. M. (1942). **Vanadium—a Consideration of its Possible Biological Rôle.**—*Amer. J. Physiol.* **136.** 772–773. **163**

Biological materials were analysed spectrographically for vanadium under conditions in which it was possible to detect as little as 1–5 p.p.m. of the metal in the ash. Various sodium, magnesium, potassium, and calcium salts were analysed as well as various samples of casein, egg-white, egg-yolk, milk powder, yeast, and normal rat tissues. No vanadium was found and if it was present in these substances it must have been in proportions below 1–5 p.p.m. These results do not confirm previous reports that vanadium is rather widely distributed and they indicate that vanadium is not required in any significant quantities for the developing chick embryo.—R. ALLCROFT.

SLEZIĆ, M., & ASHER, T. (1941). Die fluorescenzphotometrische Bestimmung des Aneurins (Vitamin B_1) in Körperflüssigkeiten des Rindes. I. Mitteilung. Ueber das Aneurin im Harm gesunder Rinder. [**Fluorescence-Photometric Determination of Aneurin (Vitamin B_1) in the Body Fluids of Cattle. I. Aneurin in the Urine of Healthy Cattle**].—*Arch. wiss. prakt. Tierheilk.* **77.** 156–163. **164**

SLEZIĆ, M. (1941). Die fluorescenzphotometrische Bestimmung des Aneurins (Vitamin B_1) in Körperflüssigkeiten des Rindes. II. Mitteilung. Ueber die Aneurinbestimmung im Blute klinisch gesunder Rinder, Ziegen und Schafe. III. Mitteilung. Aneurinbestimmung in der Kuhmilch. IV. Mitteilung. Einige Aneurinbestimmung im Harn kranker Rinder. [**Fluorescence-Photometric Determination of Aneurin (Vitamin B_1) in the Body Fluids of Cattle. II. Aneurin in the Blood of Healthy Cattle, Goats and Sheep. III. Aneurin in Cows' Milk. IV. Aneurin in the Urine of Sick Cattle**].—*Ibid.* 164–169, 170–171 and 172–178. **165**

I, II, III & IV. Estimations of vitamin B_1 did not indicate any definite relation between intake and excretion of the vitamin in cattle. In the blood of cattle, goats, and sheep there was a decrease of vitamin B_1 content when the animals were changed from stall feeding to pasture.

The possibility of correlating excretion of vitamin B_1 with condition was investigated, and in diseases affecting the digestive tract of cattle there appeared to be a lower excretion of the vitamin than in healthy animals. Acetonaemia, which was thought to be due to vitamin B_1 deficiency, was not associated with low excretion of the vitamin. In severe piroplasmosis excretion of vitamin B_1 was low.—A. M. COPPING.

See also abst. **219.**

SUPPLEE, G. C., BENDER, R. C., & KAHLENBERG, O. J. (1942). **Interrelated Vitamin Requirements: Kidney Damage, Adrenal Hemorrhage and Cardiac Failure Correlated with Inadequacy of Pantothenic Acid.**—*Endocrinology.* **30.** 355–364. **166**

Adrenal, heart or kidney damage occurred in almost all pantothenic acid deficient rats. In those animals which died suddenly, heart damage was characterized by enlargement and/or extensive haemorrhage in the auricular region, and in those cases adrenal haemorrhage was usually severe. Affected kidneys were enlarged, and mottled, there being extensive haemorrhagic centres, atrophy, and necrosis in the reticular zone of the cortical layer. Mature animals deprived of pantothenic acid voluntarily consumed about twice as much NaCl as did control animals of the same weight which were receiving adequate quantities of calcium pantothenate.—ALASTAIR N. WORDEN.

See also al / **6.**

SCARBOROUGH, H., MACFARLANE, R. G., & BACHARACH, A. L. (1942). **Discussion on Vitamins and Haemorrhagic States.**—*Proc. R. Soc. Med.* **35.** 407–414. **167**

The relationship of vitamins C, D, K, and "P" to haemorrhagic states is discussed. There is little new factual material, but MACFARLANE makes some interesting observations on the methods which claim to estimate prothrombin. Extreme vitamin K deficiency in man and animals leads to a haemorrhagic diathesis which responds, except in some cases of liver damage, to administration of the vitamin. The deficiency syndrome is attributed to hypoprothrombinaemia, and estimations of the blood prothrombin level are carried out when K deficiency is suspected or when K therapy is being

evaluated. Most of these estimations are based on the method of QUICK (1935), and while M. allows that this is a relatively simple and often valuable procedure, he gives many examples in support of his contention that it does not merely measure prothrombin, but is affected by other variables also. The test appears to be especially unreliable in estimating the alleged hypoprothrombinaemia of haemorrhagic sweet clover disease.—A. N. W.

MOSONYI, J. (1942). Einfluss der Hypophyse auf die Ascorbinsäure-Synthese beim Hunde. **[Influence of the Pituitary on Ascorbic Acid Synthesis in the Dog].** —*Hoppe-Seyl. Z.* **273.** 87–94. **168**

To study the problem of whether scurvy can occur in dogs, two groups of littermate puppies were kept on a vitamin C free diet in which vitamins A, D, and B were present in adequate amounts, and after two and three months respectively were killed and the vitamin C content of the livers, adrenals, and small intestines was estimated. Normal amounts were found to be present similar to those in the controls receiving C. It is therefore concluded that dogs can synthesize vitamin C.

Work on further dogs, some of which were hypophysectomized, showed that the vitamin C content in the latter was greatly reduced; therefore it is considered that the pituitary is concerned with vitamin C synthesis in dogs.—J. E.

See also abst. **16.**

CHAMBERS, E. E. (1942). **Acetonemia-Like Symptoms in Cows with a Hyperglycemia.**—*Vet. Med.* **37.** 221–222. **169**

C. has encountered two types of acetonaemia in cattle, one which responds well to carbohydrate administration and chloral hydrate, and another, designated as the nervous type, which does not respond. Animals with the latter type of the disease are nervous, refuse to eat, and do not ruminate. The blood sugar was found to be high in these animals and it was suggested that insulin might be administered. Accordingly 120 units of insulin in 500 ml. of 40% glucose and saline to 1 litre was administered subcutaneously in several different sites. These animals made an uneventful recovery and five days later the ketone test in the urine was negative. Several cases of acetonaemia of this type have been encountered and C. intends to report on the result of insulin treatment of 50 or more cases of this type.—G. D. S.

*MOBERG, R. (1941). Några praktiska erfarenheter av haemoglobinuria puerperalis hos nöt. **[Experiences on Puerperal Haemoglobinuria in Cattle].**—*Suom. Eläinlääkäril.* p. 451. [Abst. from abst. in *Skand. VetTidskr.* **32.** 295]. **170**

Puerperal haemoglobinuria is related to a disturbance of phosphorus metabolism, as a lack of this element predisposes to, and a sufficiency protects against, the disease [see also MADSEN & NIELSEN—*V. B.* **12.** 602]. It appears at any age but usually between 5–30 days after parturition. The temperature is normal at first but becomes subnormal with the pulse at 100–120 per minute. The visible mucous membranes are at first icteric, then anaemic. Acute cases are treated by transfusion of 2½–4 litres of citrated blood from a healthy bovine. Reports are given on 17 clinical cases.—G. B. BROOK.

FOLEY, E. J. (1942). **Toxaemia of Pregnancy in the Guinea Pig.**—*J. exp. Med.* **75.** 539–546. **171**

A disease occurring in g. pigs in late pregnancy and after parturition is described. During a period of nine months in a colony of 300 animals, 22% of the deaths were due to this disease. The course of the disease is short, 1–3 days, and is invariably fatal. The animal appears depressed, refuses food and finally becomes prostrate; respiratory distress is marked. P.M. examination reveals an enlarged bright orange-yellow or clay-coloured liver due to fatty infiltration and degeneration. Pathological changes are frequent in the lungs and less frequent in other organs. Attempts to transmit the disease failed and no infectious agent or dietetic factor could be incriminated. The disease appears to be associated with an endocrine disorder at the time of parturition. The role of heredity is being investigated. The similarity of the disease to pregnancy toxaemia of the rabbit is discussed.—ALFRED T. COWIE.

See also absts. **267, 268.**

PHYSIOLOGY AND ANATOMY

PONDER, E. (1942). **The Polycyte.**—*J. Lab. clin. Med.* **27.** 866–874. **172**

Blood films from 10% of cases of acute or chronic infection show two types of atypical polymorphonuclear leucocytes. These cells occur at the stage of commencing recovery from a marrow stimulation; they are designated the "polycyte" and "propolycyte". The former is a polymorph of normal size with a hypersegmented nucleus of 6–12 lobes, and the latter is a polymorph of normal size with several lobes of unusual complexity and is said to be the precursor of the polycyte. A case of the *in vitro* development of these cells is described. The relationship is discussed of these cells to the typical polymorph and the macropolycyte of Cooke.—ALFRED T. COWIE.

STREIT, K. (1940). Studien zur Blutkörperchensenkung beim Pferde. **[Blood Corpuscle Sedimentation in the Horse].**—*Schweiz. Arch. Tierheilk.* **82.** 487–496. **173**

By reason of the relative scarcity and diversity of reports on red cell sedimentation (R.C.S.) tests in the horse as compared with man, S. re-examined the technique and value of the test with horse blood in health and disease. He used a macro-method with tubes 35 cm. long and 6–7 mm. in diameter, filled with citrated blood. He found great variability in the normal sedimentation rate, even notable differences between separate samples of blood taken from the same horse at one time, so that he concluded that a fall in the red blood corpuscle column of anything between 6 and 40 mm. in 15 min. was normal, a fall of 41–70 mm. showed a dubiously accelerated rate, and of over 70 mm. a definitely accelerated rate.

On this basis he examined numerous horses and lists the results in many diseases. As the R.C.S. rate depends on the physical condition of the blood, which varied during the course of many diseases, it is difficult to draw significant conclusions from the results of the test, at least at the present stage of its development. —J. E.

See also absts. **145-147.**

SNYDER, C. D. (1942). **Recent Advances in Knowledge of the Liver.**—*Physiol. Rev.* **22.** 54–73. **174**

This review is restricted to the more important recent investigations on the physiology of the liver. Recent studies on the role of the liver in the regulation of the blood sugar level are described. In spite of the wealth of knowledge available, there are still too many conflicts and uncertainties and the conclusion is that it is not yet possible to define the role of each hormone

either acting alone or in concert with others known to be concerned in the extrinsic control of liver carbohydrate metabolism.

The unique role of the liver in the formation of urea, fibrinogen, prothrombin, and plasma proteins is established or corroborated by recent work. The marked increase in the clotting time of the blood of dogs in which peptone shock is induced is due to the liberation of heparin by the mast cells of the liver; only these cells respond in this way to peptone shock but the reason is not known.

Certain work on the role of the liver in the absorption, storage, and mobilization of vitamins is considered. Removal of one lobe of the liver reduces vitamin A by 25% and carotene by 50% in the remainder of the organ, while the blood vitamin A rises 3–7·5 times its former value. The low storage of vitamin D in the mammalian liver is due to the presence in lung tissue of an enzyme which destroys vitamin D, thus depleting the blood and finally the liver of this vitamin.

Dietary factors are concerned in the development of certain types of hepatic cirrhosis, tumour, and fatty infiltration. Lipocaic, present in pancreatic juice, is an essential factor for the prevention of one type of fatty infiltration.

Natural oestrogens are known to be ineffective when given by mouth. It is now clear that when these hormones enter the liver through the portal system they are inactivated. Stilboestrol, on the other hand, is not inactivated by the liver and is known to be an effective oestrogen when given *per os*.

The second half of the article is devoted to consideration of the vasculature and circulation of the vertebrate kidney, and to the vascular responses evoked by nervous stimuli and by autonomimetic drugs, and to the effects of these responses upon the rates of metabolite exchanges between liver cells and blood passing through the organ. Changes in liver volume and in the rate of blood inflow and outflow are discussed especially in relation to studies of metabolite exchanges between liver cells and blood.—W. R. MUIR.

See also abst. **252.**

TRAUTMANN, A., & ASHER, T. (1941). Resorption und Exkretion von Traubenzucker im Dickdarm der Wiederkäuer. [**Resorption and Excretion of Glucose in the Large Intestine of Ruminants**].—*Dtsch. tierärztl. Wschr.* **49.** 585–589. **175**

Doses of 2–10 g. of glucose were introduced into the caecum of goats through a permanent caecal canula; 4–8% of the dose reappeared in the faeces 7–9 hours later, showing that absorption was not complete. The intravenous injection of glucose in doses of 50–200 g. resulted in small quantities, approximately 0·5% of the dose, reappearing in the faeces 6–7 hours later.

—A. T. PHILLIPSON.

*KÖHLER, W. (1940). Versuche über die zahlenmässige Veränderung der natürlichen Bakterienflora in den Verdauungsorganen der Wiederkäuer. [**Proportional Variations in the Natural Bacterial Flora of the Digestive Organs of Ruminants**].—*Arch. Mikrobiol.* **11.** 432–469. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **140.** 355]. **176**

Two methods were used to enumerate the flora in the rumen and intestines. Centrifugation and subsequent filtration, gave too high a value, while with plating out and counting, the result was too low. By direct microscopic counting the figures per gramme for fresh rumen contents were 13·0, for the small intestine 1·36, and for the large intestine 12·31 milliards of organisms. It is calculated that the cow, by digestion of alimentary tract bacteria, could avail itself of 23·24 g. per day of bacterial protein and thus acquire about 2% of the daily protein requirements.

In all parts of the intestines 4·5 times as many cocci were found as other forms.

PAVLOV, I. P. (1941). **Lectures on Conditioned Reflexes. Volumn Two. Conditioned Reflexes and Psychiatry.** [Translated and edited by GANTT, W. H.] pp. 199. London: Lawrence & Wishart Ltd. [8vo] [8s. 6d.] **177**

Pavlov, the son of a poor Russian priest, was born in 1849. He was an energetic and passionate youth and was early inspired by a great physiologist ELIE TYSON. During the period 1878–1888 he studied the physiology of the circulatory system, from then until 1902 the physiology of the digestive glands, and as is well known, his investigations concerning the secretion of saliva and gastric juice led on to his investigations on the conditioned reflex and the higher nervous activity of animals. In later life, in 1929, when he was eighty, his general work on the nervous system led him to study psychiatry in the human subject, applying experimental methods that he had developed.

Like many original workers, Pavlov had difficulty in finding time to write and we have no logical treatise setting forth his views on the functions of the nervous system. It is therefore fortunate that his lectures and addresses have been collected and that one of his pupils, Dr. HORSELEY GANTT, should have translated them with such devoted care. The first volume appeared in 1928 and has now been reprinted to accompany volume two in which the lessons learnt from animal experiments are used in an attempt to explain abnormal behaviour in human beings. After hearing Pavlov lecture, SHERRINGTON said "his observations are the most brilliant but his deductions leave me cold". The value of much of Pavlov's work still awaits evaluation; he realised himself that his work was only a beginning but there can be no doubt that he will be looked upon as one of the five or six great men of the last generation who taught mankind to think in new terms.—J. FRANCIS.

BARCROFT, J. (1941). **Four Phases of Birth.**—*Lancet.* **241.** 91–95. **178**

This lecture is an excellent review of the advances made in the field of prenatal physiology during the last five years. The developmental physiology of the neuromuscular, respiratory, and vascular systems of the foetus in preparation for birth and the all important first breath, is briefly described. [See also *V. B.* **10.** 626, and **12.** 426.]—ALFRED T. COWIE.

SAGORSKY, N. (1942). Trächtigkeitsdiagnose bei Kühen durch ein Trächtigkeitskristallogramm der Milch. [**Pregnancy Diagnosis in Cattle by Means of a Milk Crystallogram**].—*Wien. tierärztl. Mschr.* **29.** 252–255. **179**

Various workers quoted by S. have observed that the crystal forms and patterns of certain metal salts are modified in a characteristic way when these salts separate from aqueous solutions to which animal and plant fluids have previously been added. Copper chloride is the best salt for demonstrating this effect. It appears also that blood specimens from diseased and healthy animals may produce clearly distinguishable modifications of the crystallogram and E. PFEIFFER [*Münch. med. Wschr.* **85.** 92.] claims to have diagnosed TB. with an accuracy of 86·1% in a study of 216 crystallograms.

S. finds that the crystallograms obtained after adding cow's milk to copper chloride solutions can be used to distinguish between pregnant and non-pregnant cows and also between normal cows and those affected with endometritis. Studies were made with the milk

from 42 non-pregnant cows, 87 pregnant cows, and 27 cases of endometritis. The crystal pattern changes progressively with advancing gestation and becomes clearly characteristic in the fourth month of pregnancy. The technique is described.—W. R. MUIR.

DAWSON, J. R., Jr., CRESSMAN, R. D., & BLALOCK, A. (1941). **Experimental Hypertension and Pregnancy in Dogs.**—*Amer. J. Path.* **17.** 31–37. **180**

In experiments involving 31 pregnant dogs, hypertension was produced by constriction of the renal arteries. Abortion resulted in 15 cases out of 26. Six of the dogs died, death being due to uraemia. The degree of elevation of the blood pressure varied, but generally there was an elevation after the clamps were applied, with a tendency to fall at the time of delivery, and a subsequent rise. In addition to the lesions usually found in acute experimental hypertension, hepatic lesions were present in four cases. The genesis and pathology of these lesions are considered to be different from those of lesions occurring in human eclampsia.

The lesions found in the kidneys of a dog with natural hypertension are described.—ALFRED T. COWIE.

See also abst. **186.**

HUGGINS, C., & CLARK, P. J. (1940). **Quantitative Studies of Prostatic Secretion. II. The Effect of Castration and of Estrogen Injection on the Normal and on the Hyperplastic Prostate Glands of Dogs.**——*J. exp. Med.* **72.** 747–762. **181**

Twenty-nine senile dogs with spontaneous hypertrophy of the prostate were studied. Following castration both normal and cystic prostates undergo atrophy, secretion ceases, and in three months the epithelium of the alveoli has become flattened, and cysts become irregular clefts. In three cases these changes were reversed by injection of testosterone propionate. Three pups injected daily with 0·01–0·1 mg. stilboestrol for 24 days developed squamous epithelial metaplasia of the urethra, utriculus masculinus, and the prostatic ducts; the acini were unchanged. Three dogs, 34 days after castration, injected daily with 0·4 mg. stilboestrol, developed a similar metaplasia, the acini remaining atrophic. Two senile dogs injected with 1 mg. stilboestrol daily, developed enlarged prostates and metaplasia of the ducts was intense. Ten dogs with actively secreting prostates showed a marked decrease in the rate of secretion after five daily doses of 0·4–1 mg. stilboestrol. In dogs with prostatic hyperplasia periodic doses of stilboestrol produced changes resembling those of castration. Testosterone propionate in doses of 10 mg. daily markedly increased the rate of prostatic secretion; this could be inhibited by daily injections of 0·4–1 mg. stilboestrol, but the gland did not atrophy; metaplasia of the ducts was present, but the epithelium of acini remained cuboidal. It is concluded that cystic hyperplasia of the prostate only occurs in senile dogs when they possess physiologically effective amounts of androgenic hormone. The mode of action of the oestrogen is discussed and the literature on the subject briefly reviewed.—ALFRED T. COWIE.

SUTRO, C. J., & POMERANTZ, L. (1942). **Changes in Osseous Tissue of Young Dogs after Prolonged Administration of Estradiol Benzoate.**—*Arch. Path.* **33.** 305–311. **182**

Roentgenographic and histological examination of the entire skeleton of five young mongrel dogs after subcutaneous injection of 10,000–20,000 rat units of oestradiol benzoate per week for 5–7½ months showed that osteosclerosis did not result but that growth of the skeleton was inhibited and a disturbance of the development of the os penis occurred. No changes were evident in the pubic symphysis or in the sacro-iliac joints. These results do not agree entirely with those observed in certain strains of young mice in which not only inhibition of skeletal growth but also osteosclerosis resulted from treatment with oestrogens.—R. ALLCROFT.

See also abst. **223.**

LOEB, R. F. (1942). **The Adrenal Cortex and Electrolyte Behavior.**—*Bull. N.Y. Acad. Med.* **18.** 263–288. **183**

L. reviews the literature dealing with the physiology of the adrenal cortex and primarily with its role in relation to electrolyte behaviour. The renal excretion of sodium and the internal redistribution of water and Na, resulting in the characteristic fall in serum Na in cases of adrenal insufficiency, is discussed in detail, along with the "mirror image" abnormalities in the behaviour of the potassium ion. Patients with Addison's disease treated with desoxycorticosterone esters have occasionally developed cardiac dilatation, pulmonary congestion, and even cardiac failure. It has not been possible to produce these symptoms experimentally in animals, but normal dogs injected daily with 25 mg. "doca" develop within ten days a diabetes insipidus-like syndrome; in about a month an intermittent muscle weakness appears which progressively becomes worse and if untreated is fatal. This weakness can be prevented by adding KCl to the drinking water. The diabetes syndrome is associated with an increase in the extracellular Na, the weakness with an increase in the intracellular Na. The correlation between chemical structure and physiological action of the known cortical steroids with reference to their effect on electrolyte and carbohydrate metabolism is indicated.—A. T. COWIE.

See also absts. **168, 265.**

POISONS AND POISONING

WÉRY, J. E. (1942). Polymorphisme d'une intoxication de bovins par le sulfate de cuivre. **[Various Clinical Forms of Copper Sulphate Poisoning in Cattle].**—*Rev. Sci. méd. pharm. vét., Brazzaville.* **1.** 95–99. **184**

W.'s attention was drawn to a peculiar lameness, the site of which lay in the large muscular masses, in draught oxen. Over the next two months other symptoms developed, including lesions of the buccal mucous membranes, soreness of the gums, rhinitis and conjunctivitis, and interdigital lesions. One animal died and two others were killed for P.M. examination out of a herd of over 50. The viscera showed a bluish tint in one case, with a yellow, friable liver, black clotted bile, and congested kidneys.

On fuller inquiry it was found that crushed $CuSO_4$ crystals were mixed with the food to the extent of about 1 g. per head per day, and a tentative diagnosis of $CuSO_4$ poisoning was made, confirmed by chemical analysis of the kidneys where considerable amounts of Cu were found. On cessation of the Cu medication the condition disappeared. The rhinitis and conjunctivitis were attributed to $CuSO_4$ dust, the buccal lesions to cauterization, the lameness resulting from parietal nervous lesions, and the hoof lesions to the spilling of $CuSO_4$ amongst the litter. Emphasis is laid on the need for greater discrimination in the use of medicaments of this type.—ALFRED EDEN.

JANSCH, H. (1940). Zinkphosphid- ("Jossit"-) Vergiftungen bei Haustieren. **[Zinc Phosphide Poisoning**

in Domestic Animals].—*Wien. tierärztl. Mschr.* **27.** 531–536. **185**

A method is described for estimating phosphide in animal tissues by conversion of the phosphide to phosphate. The remaining tissue is used for the determination of zinc.

Cases of zinc phosphide poisoning after ingestion of "Jossit", a rat poison, have been seen in cattle, pigs, cats, dogs, fowls, and ducks. In each case the presence of both hydrogen phosphide and zinc in organs and in stomach contents was demonstrated. P.M. examination showed gastro-enteritis, haemorrhagic infiltration of lymph nodes, pericardial and epicardial haemorrhages, and fatty degeneration of liver and kidneys.—H. B.

SUNDARESON, A. E. (1942). **An Experimental Study on Placental Permeability to Cirrhogenic Poisons.**—*J. Path. Bact.* **54.** 289–298. **186**

S. describes several experiments on albino rats designed to find whether the cirrhogenic parenchymal and mesenchymal poisons, carbon tetrachloride and senecionine, could diffuse through the placental barrier and if so whether the barrier was so damaged as to allow colloidal dyes to pass which normally do not pass. Four albino rats in the later stages of gestation were injected at varying intervals with various doses of these cirrhogens and trypan blue. The distribution of the dye was found to be the same in control and cirrhogen-treated rats, the foetuses were not stained but the maternal and foetal portions of the placenta were stained. The cirrhogen-treated rats and their foetuses showed degenerative changes of the liver. The cirrhogens and trypan blue were injected into rat foetuses *in utero* of four rats; degenerative changes were found in the livers of the mothers but the dye did not diffuse through and only the foetal portion of the placentas of the injected foetuses were stained. Repeated injections of the cirrhogens were given to 22 rats in various stages of gestation; seven failed to implant, seven aborted, and eight had dead litters or litters which died soon after birth. It is concluded that these cirrhogens can pass through the placenta at all stages of gestation.—A. T. C.

KING, W. A., CAMPBELL, H. A., RUPEL, I. W., PHILLIPS, P. H., & BOHSTEDT, G. (1941). **The Effect of Alfalfa Lipids upon the Progress of Sweet Clover Poisoning in Cattle.**—*J. Dairy Sci.* **24.** 1–8. **187**

The blood-clotting time, prothrombin time, serum Ca, haemoglobin, fibrin, and blood platelets were determined at frequent intervals throughout experimental periods of 203 and 230 days respectively for two calves fed different levels (up to 60%) of toxic sweet clover, with and without additions of petroleum ether extracts of alfalfa hay and bile salts. The results showed that during periods of alfalfa extract and bile salts therapy, there was a reduction in both blood and prothrombin clotting time; administration of bile salts had no effect on the increased blood-clotting time but did reduce the prothrombin time. When the blood-clotting time was prolonged to 60–80 min., the blood platelets rose from a normal of about 350,000 to 730,000 per cu. mm.; the haemoglobin, Ca, and fibrin values remained unchanged. It is suggested that factors other than prothrombin are involved in the upset of the blood-clotting mechanism which occurs in sweet clover disease [see also *V. B.* **12.** 608].—R. ALLCROFT.

MATHEWS, F. P. (1942). **Whitebrush (Lippia Ligustrina) Poisoning in Horses.**—*J. Amer. vet. med. Ass.* **101.** 35–38. **188**

Natural cases of whitebrush (*L. ligustrina*) poisoning in horses are characterized by lack of stamina and excessive sweating in the early stages followed by emaciation, paralysis, prostration, and ultimately death. The cause of the poisoning was established by allowing horses kept in a small paddock to browse on the plant, the symptoms including emaciation, leg weakness, and incoordination terminating in death. P.M. examination revealed methaemoglobinaemia, congested mucosa of the colon, congestion of the liver and kidneys with albuminous degeneration, and a peculiar oedema in the brain beneath the pia mater. Details are given of the microscopic pathology. Sheep and goats showed no toxic symptoms but an ass in the same enclosure died after 79 days, showing emaciation without other symptoms. A calf also showed some emaciation but none of the clinical signs exhibited by horses.—ALFRED EDEN.

KUBO, H., FUJIMOTO, H., & NAKAYAMA, H. (1938). Ueber die Leberveränderungen durch die Zufuhr von Buchweizen, gewöhnlicher Nahrungsmittel, bei Kaninchen, Ratten und Mäusen. (I. Mitteilung). **[Liver Changes Produced by Buckwheat in Rabbits, Rats, and Mice. I].**—*Trans. Soc. path. japon.* **28.** 325–336. [In German]. **189**

KUBO, H., FUJIMOTO, H., & NAKAYAMA, H. (1939). Experimentelle Untersuchung durch die Zufuhr von gewöhnlichem Buchweizen—Nahrungsmittel. (II. Mitteilung.) Analitisch-biologische Untersuchung. Ueber die Entwicklung der Leberzirrhose und des Leberzellentumors. **[Experimental Feeding of Buckwheat. II. Development of Liver Cirrhosis and Liver Cell Tumours].**—*Ibid.* **29.** 387–393. [In German]. **190**

I & II. Cirrhosis of the liver was observed to be common among the inhabitants of northern Korea, where the diet consists mainly of buckwheat meal. To investigate how far this food is responsible for the changes in the liver, a large number of experiments was undertaken in rabbits, rats, and mice. Prolonged (five months') feeding on buckwheat husks caused marked hyperplasia of the interstices of the liver, increase in size of the spleen, and alterations of the kidneys, such as decrease in size, increased excretion of urine, small glomeruli, and atrophied tubules which frequently had lost their lumen. Osteoporosis and swelling of the lymph nodes, as well as a persistent thymus were also observed. It is thought that a substance contained in the alcoholic extract of buckwheat was responsible for the changes in the liver and that a substance contained in the alkali extract of the husks was probably responsible for the other changes.

Further experiments confirmed that the husks of the dark-brown buckwheat contain a substance which causes osteoporosis, especially of the skull bones, and is also responsible for a persistent thymus. Rabbits and mice fed on black or white buckwheat meal developed cirrhosis of the liver together with great enlargement of the spleen. It seems that the substance acting upon the liver is present in greater quantities in buckwheat meal than in husks, although the husks may also contain the same substance. Rats developed cirrhosis of the liver when fed on ether, acetone, and other extracts of buckwheat meal.—E. R. PARISER.

MESHKOV, N. V. (1941). K patomorfologii mozga pri otravlenii difosgenom. **[Brain Pathology in Diphosgene Poisoning].**—*Veterinariya, Moscow.* No. 2. pp. 124–129. [French summary]. **191**

Experiments were conducted on 18 dogs and cats poisoned by different gas concentrations. About 5,000 histological preparations were examined. Brain lesions occurred soon after the inhalation of the gas and they developed simultaneously with other changes in the body. Macroscopically they were less pronounced at the initial stage, preceding the pulmonary oedema, and

more pronounced after its development. In the later stages, no changes could be recognized macroscopically. The microscopical changes were more concentrated in the grey matter, especially in the hemispheres, corpus striatum, and thalamus; the cerebellum and the medulla oblongata were less affected. Before the development of the pulmonary oedema which occurs a few minutes after exposure, chromatolysis, and hydropic degeneration of the ganglion cells, without destruction of their nuclei, were observed; later these changes became more accentuated, cells became swollen, and cytolysis appeared, as well as groups of pycnomorphous cells which later underwent shrinking and became debris. Neuronophagia, swelling and hyperchromatosis, and, in severe toxic cases, hyperplasia and hypertrophy of Horteg's cells were observed in the neuroglia and also changes in the vascular system such as dilatation, atony of the walls, capillary hyperaemia and blood extravasation. In animals recovered from severe intoxication, the late degenerative changes such as cytolysis and sclerosis were observed quite independently from those observed in respiratory organs. In M.'s opinion, the lesions in the brain should be regarded as a toxic encephalopathy. Six photomicrographs illustrate the paper.—A. MOLDAWSKY.

See also absts. **157, 262, 263.**

THERAPEUTICS AND DISINFECTION

—. (1942). **Fifth Addendum to the British Pharmacopoeia 1932.** pp. 42. London: Constable & Co. Ltd. [8vo] [5s.] **192**

This addendum contains the monographs giving formulae for certain concentrated preparations (*e.g.* tinct. opii camphoratae concentrata, tinct. tolutana concentrata) to be used as alternatives to the corresponding preparations of the B.P. This does not represent a recommendation for the use of these drugs, but provides for their use in the form which requires the least possible amount of alcohol. The addendum also provides for the use of Indian belladonna in a number of preparations; for the use of arachis oil, cottonseed oil or sesame oil instead of olive oil in the preparation of extract of male fern; and gives details of emulsion of chloroform and of peppermint, as alternatives to spirits of chloroform and of peppermint. A cumulative index for addenda one to five is a valuable feature.—J. M. ROBSON.

KING, H., & STRANGEWAYS, W. I. (1942). **Some Observations on the Relation between Chemical Structure and Drug-Resistance Among Arsenicals.**—*Ann. trop. Med. Parasit.* **36.** 47–53. **193**

From a consideration of the action *in vitro* of various aromatic arsenoxides on normal and on drug-resistant strains of *Trypanosoma rhodesiense*, the authors postulate three ways in which this type of drug may gain access to the cell-body of the trypanosome. In the first way, characteristic of arsenoxides with free carboxyl groups, the drug forms neutral salts with a great affinity for water, which may be regarded as penetrating the cell-body in a similar manner to, say, glucose. The second way is characteristic of substances like phenylarsenoxide and xylylarsenoxide. The authors suggest that they are taken up in the cell-body of the trypanosome at a lipoid-water interface so that the phenyl or xylyl group is in the lipoid, and the arsenoxide group is at the water interface. In the third way, they suppose the drugs to be adsorbed on a surface of the trypanosome in the same way as the oxazine and acridine dyes. Examples of drugs which act in this way are tryparsamide, benzamide *p*-arsenoxide, phenyl *p,p'*-diarsenoxide, and various phenyl thio-arsenites.—D. G. DAVEY.

HANSEN, L., & KREIDLER, W. A. (1942). **Studies with Sulfabenamide. I. Blood Levels and Elimination in the Urine of Uninfected Rabbits. II. Therapeutic Value, Blood Levels, and Elimination in the Urine of Rabbits Infected with Beta Hemolytic Streptococci.**—*J. infect. Dis.* **70.** 208–214 and 215–220. **194**

I. Sulphabenamide was administered to rabbits in suspension in gum tragacanth, either orally or intraperitoneally. It was not absorbed rapidly from the intestine; absorption from the peritoneum was somewhat more rapid. The blood content of total sulphabenamide changed slowly for a given daily dose, and showed a tendency to rise on successive days. It occasionally continued to remain high or even to rise for a day or two after the administration had been stopped. The percentage of free base in the blood varied widely in different animals, though it was fairly constant for individual rabbits. Elimination in the urine also varied widely in different rabbits.

II. Sixty-nine rabbits infected with β haemolytic streptococci were treated with sulphabenamide while 40 rabbits were used as controls. The mortality was 39·1% in the treated and 73·5% in the control animals. The drug had approximately the same therapeutic value in this infection as sulphanilamide. No correlation appeared to exist between the blood levels of the conjugated or free base forms of the drug and the survival time of the rabbit after inoculation.—J. M. ROBSON.

See also abst. **3.**

WEDUM, A. G. (1942). **Immunological Specificity of Sulfonamide Azoproteins.**—*J. infect. Dis.* **70.** 173–179. **195**

Sensitization, as tested by skin reactions and anaphylaxis in g. pigs and by precipitation tests with rabbit serum, can be produced by the administration of the azo protein compounds of sulphanilamide, sulphapyridine and sulphathiazole. The sulphonamide uncombined with protein could not serve as sensitizing or as testing agents. The experiments suggest that a serological gradient of specificity may exist, according to which sulphathiazole creates the broadest base of heterogenic antibody among the three sulphonamide compounds and sulphanilamide the least.—J. M. R.

I. JOHNSON, F. H. (1942). **Mechanism of p-Aminobenzoic Acid Action and the Parallel Effects of Ethyl Carbamate (Urethane).**—*Science.* **95.** 104–105. **196**

II. MCILWAIN, H. (1942). **The Biochemical Specificity of Sulfanilamide and of Other Antibacterial Agents.**—*Ibid.* 509–511. **197**

I. On the basis of a reversal with methane of the effect of sulphanilamide on luminous bacteria, J. questions the theory of the antibacterial action of sulphanilamide suggested by WOODS [*V. B.* **10.** 790.], and speculates regarding the possibility of explaining the action of sulphanilamide, methane, and *p*-amino benzoic acid as a narcotic-like effect. Quoting the familiar principle that narcotics, in general, and many poisons exert stimulating effects in small doses, he emphasizes that the stimulating action of one narcotic may antagonize the inhibitory effect of another simultaneously present. Accordingly, regarding the aforementioned substances in this light, if the inhibitor is sulphanilamide, the antagonist (methane or *p*-aminobenzoic acid) is looked on as exerting an antisulphanilamide action.

II. In reply to I above, evidence is presented that, while methane may, under certain conditions, antagonize the antibacterial action of sulphanilamide, these condi-

tions are limited and the action is nonspecific. The "narcotic hypothesis" postulated by J. gives no expectations of mutual specificity between antibacterial agent and the growth substance to which it is related. Such specificity does, however, apparently exist between sulphanilamide and *p*-aminobenzoic acid, and between several other recently discovered antibacterial agents and their related growth essentials [see *V. B.* **11.** 591.], and may be readily explained in terms of competitive enzyme inhibition [see *V. B.* **10.** 790].—J. L. McGirr.

Greig, J. R. (1942). **Preparation of Solutions of Calcium Boro-Gluconate. [Correspondence].**—*Vet. Rec.* **54.** 245. **198**

It is stated that aqueous solutions of calcium borogluconate, in which the proportion of boric acid to calcium gluconate is 1 : 8, remain stable for prolonged periods and that solutions in which the proportion is 1 : 12 remain stable for at least two weeks. Boric acid is now in short supply in Great Britain and in order to effect economy in its use the recommendation is made on the basis of the above observations that only 1 drachm of boric acid instead of the previously recommended 1½ drachms be added to each ounce of calcium gluconate in the preparation of calcium borogluconate solutions.—W. R. Muir.

Martin, F. E. (1942). **The Eradication of Streptococcic Mastitis by Treatment with Tyrothricin.**—*J. Amer. vet. med. Ass.* **101.** 23–25. **199**

130 infected quarters of 49 cows in a herd of 71 were treated with a 50% mineral oil emulsion containing 1·5 mg. tyrothricin per ml.; diagnosis was made by the incubated smear method. Subsequent examinations showed that 117 (90%) of the infected quarters were cured, requiring an average of 2·3 treatments per quarter. The average dose injected was 20 ml. of the emulsion containing 30 mg. tyrothricin, but no serious swelling was observed when 20–40 ml. of mineral oil emulsion containing 20–60 mg. tyrothricin were injected. Treatments were administered in all stages of lactation and the milk usually returned to normal appearance within five days. It is suggested that tyrothricin should be used in cases of infection with organisms tending to produce a chronic mastitis as soon as diagnosed, for when the condition is treated in the subclinical stage the loss in production is comparatively slight.—R. Allcroft.

Krasil'nikov, N. A., & Korenyako, A. I. (1939). Bakteritsidnoe veshchestvo aktinomitsetov. **[Bactericidal Properties of Actinomycetes].**—*Mikrobiologiya, Moscow.* **8.** 673–685. [English summary]. **200**

Bactericidal and antagonistic properties of substances which are produced by some species of actinomycetes and which were named by Welsh "actinomycetin" [see *V. B.* **12.** R1–R6.], were tested on many different nonpathogenic and a few pathogenic bacteria. The most active actinomycetin was found to be produced by *Actinomyces violaceus*, and less active by *A. longisporus ruber*, *A. verne*, *A. albicans*. No bactericidal substances were produced by *A. niger*, *A. albus*, *A. coelicolor*, or *A. violaceus niger*. The greatest actinomycetin production was found to be produced on synthetic media; on media containing proteins, its formation was slight or totally absent. Actinomycetin is filtrable, heat-stable, and resistant to radiating energy of radon and polonium. A sterile preparation could be obtained. Its properties resemble those of lysozyme, but the two substances are not identical. Investigation of its inhibitory action showed that staphylococci (seven strains) were very susceptible to the action of actinomycetin. Certain other pathogenic bacteria were found less susceptible, especially tubercle bacilli which were less susceptible than acid-fast saprophytes, while the growth of *Bacterium coli*, *Pseudomonas pyocyanea*, and *Ps. fluorescens* was stimulated by the presence of actinomycetin.—A. Moldawsky.

I. Richet, C. (1942). Contribution à l'immunisation chimiobiologique de certains animaux contre le *Trypanosoma rhodesiense* et le *Trypanosoma brucei*. **[Chemo-Biological Immunization of Animals against *T. rhodesiense* and *T. brucei* Infections].**—*Bull. Soc. Path. exot.* **35.** 98–103. **201**

II. Roubaud, E. (1942). A propos des expériences d'immunisation chimiobiologique de M. Charles Richet. **[Comment on Richet's Article on Chemo-Biological Immunization against Trypanosomiasis].**—*Ibid.* 104–105. **202**

I. Using rats and rabbits as test animals, R. found that about half of those which were infected with *T. rhodesiense*, and then given curative doses of "sulfar", 80 days later resisted a test infection with the same strain. This immunity never developed if the drug was given before the septicaemia stage of the initial infection.

With *T. brucei* similar results were obtained, though the immunity appeared to be a function of the interval between drug injection and test infection: immunity was inapparent after 60 days but was strong after 90–140 days.

R. makes two distinctions between this and bacterial immunity:—(1) the conjunction of immunization and chemotherapy, and (2) the "slight degree" of immunity produced.

II. Roubaud, in whose laboratory Richet [see I] worked, refers to his initial scepticism about the latter's claim concerning chemo-biological immunization. Later, however, he became converted to the theory. In this note the drug used is called sulfarsenol.—J. E.

See also abst. **271.**

Levine, P. P. (1942). **Chemotherapy in the Control of Avian Coccidiosis.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 118–120. **203**

The results are described of medication with sulphanilamide, sulphapyridine, sulphathiazole, sulphaguanidine, and flowers of sulphur for coccidiosis in fowls. Sulphaguanidine was the most effective. At a level of 0·5% of the ration, all species, with the exception of *Eimeria necatrix* and *E. tenella*, were completely eliminated. Concentrations of 1·0 and 1·5% subsequently controlled heavy infections of *E. necatrix* and *E. tenella*. The toxicity of the drug is low, and the weight gains of young birds undergoing medication are only slightly retarded. Clinical use of the preparation, however, is restricted, since administration must be completed before infection occurs. Medication in either the preclinical or clinical stages exerts no beneficial effect on the course of the disease.—D. D. Ogilvie.

Marshall, E. K., Jr., Litchfield, J. T., Jr., & White, H. J. (1942). **Sulfonamide Therapy of Malaria in Ducks.**—*J. Pharmacol.* **75.** 89–104. **204**

An effective concentration of the drug in the blood for a sufficiently long time is necessary for successful therapy in bacterial infection and the present authors have shown that this need is also applicable in avian malarial infections. Usually to attain this end, more drug is used in single daily dosage than in multiple daily dosage, but the differences in required dosage of different drugs vary as their relative rates of absorption and excretion in the host. For example, to produce the same therapeutic effect, 40 times more sulphathiazole is required with single daily dosage than with multiple daily dosage, but with sulphanilamide only 2–3 times more is required under the same conditions. Knowledge

of blood concentration produced by a drug is of importance as a means of comparison: sulphaguanidine, in the duck, gives three times the blood concentration produced by a similar quantity of sulphathiazole. The reverse holds true in mammals. To some extent the antimalarial activity of the sulphonamides and sulphones resembles their antibacterial activity, *e.g.*, sulphaguanidine and the heterocyclic derivatives of sulphanilamide are antimalarial substances. On the other hand, N′-methyl- and N′,N′dimethyl-sulphanilamide and N-sulphanilylmorpholide are more active than sulphanilamide in malarial infections although they are less active than sulphanilamide in streptococcal and pneumococcal infections in mice. The antimalarial activity of the drugs is antagonized by *p*-aminobenzoic acid. The magnitude of parasitaemia in treated ducks as compared with untreated birds at the height of parasitaemia is a useful criterion of therapeutic effectiveness. The magnitude of parasitaemia on the sixth day after infection was correlated with survival time and percentage survival.—C. Horton Smith.

Lavrent'ev. P. A. (1941). Deĭstvie piroplazmina pri frantsaielloze krupnogo rogatogo skota. **[Treatment of Bovine Francaiellosis with Piroplasmin].**—*Veterinariya, Moscow.* No. 2. pp. 90–91. [French summary]. **205**

Piroplasmin in doses of 0·001–0·0012 g. per kg. body weight was found to be of therapeutic value in naturally and artificially infected animals. Two, three and sometimes four injections were found necessary, and although the parasites disappeared from the peripheral circulation after one or two injections, the febrile reaction remained for 3–5 days. L. recommends repeated injections, until the temperature returns to normal, even in cases where the parasites have disappeared from the peripheral circulation.—A. M.

Wilkinson, P. B. (1942). **Sulphanilamide in Treatment of Smallpox. Review of 103 Cases.**—*Lancet.* **243.** 67–69. **206**

The drug appears to be without effect on the toxic phase of the disease. It is capable of modifying the skin lesions rather as they are modified by vaccination and it is very effective in the treatment of many of the complications associated with the focal phase. It reduces the fatality among cases showing septic complications.—J. M. Robson.

See also abst. **108.**

Heidegger. (1942). Versuche mit einigen Läusemitteln. **[Trials of some Delousing Agents on Horses].**—*Z. Veterinärk.* **54.** 160–166. **207**

The following agents were used in a series of trials, both *in vitro* and on louse-infested horses (*Haematopinus asini*):—nicotine and nicotine acetate, eau de Javelle, mild mercurial ointment, acetum sabadillae, hexachlorethane, "durosept", and "T.14". *In vitro* eau de Javelle gave promising results and was just as effective as the more poisonous nicotine. The mercury product was ineffective. "T.14" [composition not given] was highly efficient. The effect of dry heat was also studied; hot air at 47°–50°C. killed lice with certainty within 8–10 min.

On louse-infested horses, nicotine acetate was efficient. One dressing was sufficient in short-haired or clipped horses, but a second dressing was necessary in longer-haired animals. The nits were also killed by this treatment. This agent was not, however, effective against *Trichodectes*. Eau de Javelle was less effective in practice and was no use at all in long-haired subjects. Treatment in a hot-air chamber for 15–20 min. at a temperature of 48°–50°C. was effective if the horse was clipped but was ineffective in long-haired horses. On the other hand, the combination of hot-air treatment with any one of the dressings gave a better result than the dressing alone, *e.g.* nicotine acetate had no action on *Trichodectes pilosus* but this parasite was killed if the treatment was supplemented by hot-air treatment. "T.14" was highly efficient, and has the advantage of being a dry dressing. About 300–400 g. of the powder were used and the application took about half-an-hour. It was advisable to repeat the treatment after 8–14 days as this drug did not affect the nits.—H. E. Harbour.

Kurchatov, V. I. (1940). O sposobakh bor'by s kleshchami i nasekomymi, vredyashchimi zhivotnovodstvu. **[Methods for Control of Ticks and Insects Injurious to Animals].**—*Sovyet. Vet.* No. 11/12. pp. 26–29. **208**

This is a short survey of papers on the subject received by the *Sovyet. Vet.* but not printed.—A. M.

See also absts. **267-269.**

I. Gordon, R. M., & Seaton, D. R. (1942). **Observations on the Treatment of Scabies.**—*Brit. med. J.* June 6th. 685–687. **209**

II. Mellanby, K., Johnson, C. G., & Bartley, W. C. (1942). **The Treatment of Scabies.**—*Ibid.* July 4th. 1–4. **210**

I. Using albino rats naturally infected with mites of the genus *Notoëdres*, the authors compared the sarcopticidal properties of dimethylthianthrene (or dimethyl-diphenylene disulphide or mitigal), benzyl benzoate, and tetra-ethylthiuram monosulphide. The three drugs were applied in 50% dilution in the methyl ester of the fatty acids of coconut oil. The areas of the skin to be treated were first washed and then the respective preparations were massaged into the skin. Success of the treatment was determined by subsequent sectioning of the skin and examination for degree of degeneration in the mites and eggs. It is considered that both benzyl benzoate and dimethylthianthrene are inferior to tetra-ethylthiuram monosulphide, the action of which is at once more rapid and more lethal.

II. Experiments on the treatment of scabies (human) were conducted in various ways with sulphur ointment, Marcussen's ointment, flowers of sulphur, sodium thiosulphate and HCl, "sulfomil", sulphur administered *per os*, rotenone, benzyl benzoate, dimethyl-diphenylene disulphide, and pyrethrum. It is concluded that, of the common treatments, only sulphur ointment and benzyl benzoate are satisfactory. Dimethyl-diphenylene disulphide is excellent, but is expensive and difficult to obtain at present.—D. G. D.

Howell, C. E., & Britton, J. W. (1942). **Phenothiazine as an Anthelmintic.**—*Cornell Vet.* **32.** 255–265. **211**

In this general survey of the qualities of phenothiazine as an equine anthelmintic, the authors discuss several of their own findings and experiences in relation to the published observations of others. They affirm the effectiveness of the drug against horse strongyles, and state that the dose for horses weighing up to 1,000 lb. should not exceed 30 g.; they consider that 20–25 g. per 1,000 lb. may prove satisfactory. In the case of pregnant mares, nursing mares, and weak, emaciated horses they believe that it may be advantageous to divide the therapeutic dose and administer it in daily portions of 1–5 g. Regarding the toxic action of phenothiazine, an action which is observed for the most part only when the dose used has greatly exceeded the minimum therapeutic dose, they suggest that two properties of the drug appear to account for most of the observed symptoms. Firstly, phenothiazine has a

marked constipating action; if severe constipation should be caused then impaction of the stomach or colon may result, followed by icterus, colic, fast and weak pulse, dullness, and haemoglobinuria. Secondly, the drug is a mild, local irritant, and this action offers a logical explanation of the congestion of the kidneys which is sometimes observed; it also accounts for the mild, cloudy swelling of the liver following excessive doses since part of the absorbed product (phenothiazine and/or oxidation derivatives) is excreted in the bile. They ascribe the anaemia which may result from phenothiazine therapy to an irritant action on the bone marrow. A point of more than ordinary interest is their contention that the enlargement of the spleen, liver, and kidneys which have been found in some cases of presumed phenothiazine poisoning is a P.M. change. As contra-indications to the straightforward use of the drug they quote extreme emaciation, anaemia, and constipation.—D. G. DAVEY.

WHITEHURST, V. E., Jr., & SWANSON, L. E. (1942). **Phenothiazine as an Anthelmintic for Sheep.**—*J. Anim. Sci.* **1.** 256–259. **212**

Following unsatisfactory results with a copper sulphate, nicotine sulphate mixture for the control of nematodes in a flock of sheep, a trial of phenothiazine was made. The sheep were fasted for 24 hours prior to medication, after which they were offered the phenothiazine mixed with ground feeds. The dose was 25 g. of drug per adult sheep, mixed in approximately ½ lb. of feed. The sheep were kept in pens until the feed was consumed and then they were turned out to pastures consisting of annual crops. Treatment was repeated at monthly intervals. The results indicate that the treatment was very satisfactory in controlling *Haemonchus contortus* and *Ostertagia circumcincta*, and partially successful in controlling *Trichostrongylus* spp. and *Cooperia* spp. No toxic effects were noted.

—D. G. DAVEY.

HABERMANN, R. T., FOSTER, A. O., & HUMMON, O. J. (1942). **Treating Pregnant Ewes with Phenothiazine.**—*N. Amer. Vet.* **23.** 390–393. **213**

During the years 1941 and 1942, a total of 138 ewes in various stages of pregnancy have been treated with phenothiazine by the authors under field conditions. Each ewe was allowed 25 g. of the drug, the dose being mixed into the feed. No untoward results of the treatment were observed; in particular, the number of stillbirths and early deaths among the lambs did not increase. In toxicity tests, three ewes in advanced pregnancy were given 25 g., 80 g., and 100 g. of phenothiazine respectively and each lambed normally. A fourth ewe was given 15 g. of the drug daily for 21 days before parturition, and again no adverse effects were observed on either mother or lamb.—D. G. DAVEY.

See also abst. **141.**

RENK, W. (1941). Beobachtungen über Wurmschäden und Alleganbehandlung bei erwachsenen Pferden. **[Helminthiasis in Fullgrown Horses and Allegan Therapy].**—*Tierärztl. Rdsch.* **47.** 462–466. **214**

R. quotes German writers to the effect that adult horses are little affected by worm parasites and describes five cases of death in fullgrown horses in which worm aneurisms were present, although they were not the sole cause of death. As four of these horses came from a single stud, it was decided to examine every stallion there for helminth infestation. 105 heavy and 29 half-bred horses were examined. Faecal examination showed 90% to be infested with strongyles and a few with ascarids. The horses were bedded on straw and were never at pasture, and during the service period they were transported in horse boxes; during the summer green food was fed in the stables. Twenty-one horses showed definite symptoms of parasitism, manifested by colic, diarrhoea, pica, sweating, and pale mucosae.

It is stated that a course of treatment with allegan caused the evacuation of a few ascarids but no strongyles. After treatment, faecal examination showed that the egg counts were insignificant in 61 of the 73 horses.

—A. L. WILSON.

*MAMELI, I. (1940). Il tetracloruro di carbonio nel trattamento della distomatosi. Risultati pratici ottenuti negli ovini e nei caprini. **[Carbon Tetrachloride Therapy of Fascioliasis in Sheep and Goats].**—*Profilassi.* **13.** 108–110. [Abst. from abst. in *Jber. Vet.-Med.* **69.** 364]. **215**

Carbon tetrachloride was used with success in several large flocks of sheep and goats in which fascioliasis had caused heavy losses.—A. L. WILSON.

PLOTNIKOV, N. N. (1940). Materialy po spetsificheskoĭ terapii opistorkhoza. **[Specific Therapy of Opisthorchiasis].**—*Med. Parasitol. Moscow.* **9.** 419–426. **216**

After reviewing the literature on the subject, P. gives an account of his own observations which were made mainly on cats and dogs. A single subcutaneous injection of 0·39–0·45 ml. of fouadin per kg. body weight in the cat caused the elimination of all the opisthorchid parasites from the host. The therapeutic value of the treatment was considerably lower when 0·83 ml. per kg. was given in a series of ten injections. The toxic effect of fouadin concentrated on healthy animals was investigated and it was found that 0·37–0·43 ml. of the preparation per kg. body weight in a single dose was fatal to cats in 2–2·5 days and 0·48 ml. was fatal in 32 hours; a dog given 0·5 ml. per kg. body weight died one day after the injection. Pentavalent antimony preparations were ineffective, as were also bismuth preparations and gold preparations (gold and potassium bromide). Gentian violet gave slight results when 0·215 g. was administered *per os* and intravenously to cats. Treatment consisting of the administration of carbon tetrachloride and gentian violet proved to be quite successful.—E. R. PARISER.

HARWOOD, P. D., JERSTAD, A. C., UNDERWOOD, P. C., & SCHAFFER, J. M. (1940). **The Efficacy of N-butyl Chloride for the Removal of Intestinal Nematodes, Especially Whipworms, from Dogs.**—*N. Amer. Vet.* **21.** 35–41. **217**

Dogs received *n*-butyl chloride in hard gelatin capsules, at a dose rate of 1 ml. per kg. body weight, after 24 hours' fasting. In 24 dogs no purge was given, whilst in 26 dogs twice as much castor oil or mineral oil as *n*-butyl chloride was administered. An average of 57·7% of *Trichuris vulpis* was removed from the 24 dogs in the first group. Dogs receiving over 11 ml. of the drug eliminated relatively more of the total number of whipworms present than those receiving a smaller dose. When castor oil was given independently, the efficacy of the *n*-butyl chloride was 47·2%, and when the castor oil was mixed with the anthelmintic before administration the efficacy was on the average only 23·2%. Relatively small doses of the drug were also very effective for the removal of *Toxocara* and *Toxascaris* spp. and *Ancylostoma caninum*. No harmful effects followed treatment and the authors suggest that this drug may well replace tetrachlorethylene, which has occasionally proved toxic for dogs.—M. L. BINGHAM.

See also abst. **142.**

*LEHMANN, H. (1941). Therapeutische Versuche mit Natriumhyposulfit und Salzsäure bei Herpes tonsurans und Läusebefall der Pferde. **[Treatment of**

Ringworm and Louse Infestation in Horses by Sodium Hyposulphite and Hydrochloric Acid].—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 112]. 218

Trichophyton ringworm was found to be prevalent in German army horses in Normandy, though indigenous farm horses were rarely affected. Treatment by sodium hyposulphite and HCl was instituted. This treatment was also effective against lice, but $Na_2S_2O_4$ alone gave good results also. It was necessary to repeat treatment in ten days in the case of lice.

*ELLINGSEN, J. K. (1942). Anvendelse av Betaxin ved lammedodlighet. [**" Betaxin " (Vitamin B_1) Therapy of Lamb Diseases**].—*Norsk VetTidsskr.* p. 34. [Abst. from abst. in *Skand. VetTidskr.* **32.** 378 and 380]. 219

In the spring of 1941 E. investigated a disease from which a large number of lambs [percentage not given in abstract] were dying after a few hours' illness. P.M. examination revealed nothing, except in one lamb which showed ulcers of the abomasum. Injection of two ampoules of aneurin [strength not given] subcutaneously into each affected lamb resulted in the recovery of three seriously affected lambs whilst others survived after exhibiting symptoms which hitherto had been fatal. [Bacteriological or other special examinations are not mentioned in the Swedish abstract.]—G. B. BROOK.

LEU, A. (1942). Ein Beitrag zur Behandlung steriler Kühe und Jungrinder mit der Lugolschen Lösung. **[Treatment of Sterile Cows and Heifers with Lugol's Iodine Solution].**—*Schweiz. Arch. Tierheilk.* **84.** 263–273 and 300–308. 220

A clinical account with no new information.
—ALEX. B. PATERSON.

I–III. ANDRES, J. (1941). Das Uterustonicum "Metratonin" zugleich ein Beitrag zur Ätiologie, Diagnose und Therapie der chronischen Endometritis und der Pyometra des Rindes. I, II, & III. [**" Metratonin "; also the Aetiology, Diagnosis and Therapy of Chronic Endometritis and Pyometra in Cattle. I-III].**—*Schweiz. Arch. Tierheilk.* **83.** 401–419 and 447–467. 221

IV. WYSSMANN, E. (1941). Zur Anwendung der Herba Sabinae und Cortex Chinae als Uterinum beim Rind. **[The Use of Herba sabinae and Cinchona Bark as a Uterine Tonic in Cattle].**—*Ibid.* 254–263. 222

I–III. A. reviews the literature and discusses in detail pyometra and chronic endometritis. He describes a new method of treatment of 500 cases and also cases of atony of the uterus without local disease. In 90% of these cases normal oestrus and conception followed. "Metratonin" was used in many of these cases. It is an extract of *Summitates sabinae* and other similar substances put up in a neutral, non-absorbable oil as vehicle. It is administered into the uterus in doses of 100–300 ml.; 75–85% of cases treated only with "metratonin" showed full recovery. It is contraindicated in acute endometritis.

A tonic action on the uterus with consequent emptying of the organ occurs 1–3 days after the administration of "metratonin".

IV. W. states that cinchona bark has great advantages as compared with herba sabinae, as it can be used in acute inflammatory conditions of the genitalia. He remarks that cinchona bark is, as in 1914–18, difficult to obtain and very expensive.—J. M. ROBSON.

See also abst. **159.**

VON HAAM, E., & ROSENFELD, I. (1942). **The Effect of the Various Sex Hormones upon Experimental Pneumococcus Infections in Mice.**—*J. infect. Dis.* **70.** 243–247. 223

The mice were injected with a laboratory strain of type I pneumococcus which killed control animals after an average survival period of 26–36 hours. Oestrone and testosterone propionate increased the survival period. Progesterone and stilboestrol had no effect. The optimum dose of oestrone was 0·1–1·2 mg., and male and female mice were equally protected. Testosterone propionate protected male and female mice to a moderate degree at a dose level of 0·001–0·1 mg. At higher dose levels the protective effect was increased for male mice but decreased for female mice.—J. M. R.

See also abst. **181.**

GREEN, H. N., & PARKIN, T. (1942). **Local Treatment of Infected Wounds with Sulphathiazole.**—*Lancet.* **243.** 205–210. 224

Fourteen grossly infected wounds, many of which had failed to respond to other treatments, including sulphonamides by mouth, were treated by the intensive local application of sulphathiazole. The clinical infection rapidly subsided under treatment in every case, though usually the causative organism was not eliminated. Preliminary trials with the local application of warm saturated sulphathiazole solution, suggest that it may prove an efficient method of treating local sepsis. In routine clinical work at the present time, no other local antiseptic treatment of infected wounds should be attempted before the sulphonamides, preferably sulphathiazole, have been given an adequate trial.—J. M. R.

MATTHEWS, D. N. (1942). **The Value of Local Chemotherapy in Wounds and Burns.**—*Lancet.* **243.** 271–275. 225

Experimental work on human wounds has shown that the local application of sulphanilamide and sulphathiazole greatly lowers the number of living organisms in an infected wound, and that this action is produced locally. These results are obtained when only a trace, or at most 1 mg.% of the drug is present in the bloodstream, but over the same period the kidney may be called on to excrete a fair percentage of the total quantity exhibited. The great benefits of this form of therapy have been illustrated by reference to macroscopic improvement, to the separation of sloughs, and to the results of early grafting and primary suture. In prophylaxis the sulphonamides are of great value, but after primary suture small doses must be given by the mouth for four days.—J. M. ROBSON.

ROBERTSON, O. H., BIGG, E., PUCK, T. T., & MILLER, B. F. (1942). **The Bactericidal Action of Propylene Glycol Vapor on Microorganisms Suspended in Air. I.**—*J. exp. Med.* **75.** 593–610. 226

Propylene glycol vapour dispersed as an aerosol had a marked and rapid bactericidal effect upon various bacteria introduced into the atmosphere in droplet form. In concentrations of 1 g. vapour in 2–4 million c.c. of air it produced an immediate and complete sterilization of the atmosphere of an enclosed chamber into which had been sprayed pneumococci, staphylococci, streptococci, *Haemophilus influenzae* and influenza virus. At lesser concentrations of the vapour the number of bacteria in the atmosphere fell markedly, but complete sterilization required a longer time of exposure; even at dilutions of 1 g. vapour per 50 million c.c. of air there was a pronounced bactericidal action against pneumococci and haemolytic streptococci.

The bactericidal effect was shown to be due to the actual killing of the organisms, and not to an inhibition of growth upon the agar plates on which the number of bacteria was determined. Other glycols, including ethylene, 2 : 3-butylene, and trimethylene, besides a

number of chemically related compounds were found to be highly efficient against bacteria in aerosol form. The probable mechanism by which propylene glycol vapour exerts its effect on bacteria in droplet form is discussed, with some references to its bactericidal properties *in vitro*.

Some advantage of propylene glycol vapour include the properties of invisibility, non-irritability and odourlessness, and its low toxicity even when administered orally or intravenously. Studies are in progress to determine the effects of continued long breathing of these glycol-containing atmospheres.—ALFRED EDEN.

ELFORD, W. J., & VAN DEN ENDE, J. (1942). **An Investigation of the Merits of Ozone as an Aerial Disinfectant.**—*J. Hyg., Camb.* **42.** 240–265. **227**

The disinfectant action of ozone, prepared by a special ozoniser in which only traces of oxides of nitrogen are produced, upon aerosols of *Staphylococcus albus*, *Streptococcus salivarius* and *Streptococcus* 'C' was studied by special plating technique. Details are given of the method for the estimation of ozone in air samples; the concentrations studied ranged from 0·025–2·4 p.p.m. The aerosols were produced by a special atomizer or by sneezes from infected ferrets, and it was found necessary to control carefully the relative humidity of the experimental chamber. Full experimental details are given.

At the above concentrations of ozone and at a relative humidity of 60–90%, ozone was able to inactivate the above species of bacteria when present as single unprotected aerosol particles. When the bacteria were covered with a protective coating of organic matter (as by a natural sneeze or cough) ozone was ineffective at permissible concentrations; at higher concentrations, which would be dangerous for prolonged spells of breathing, ozone was more effective against protected aerosols. Bacteria which had settled on surfaces were more resistant to ozone than when present in newly formed aerosols. The net effect of the present evidence is that ozone, at concentrations that can be tolerated for prolonged periods without irritation, cannot be expected to provide any effective protection against air-borne bacterial infection by direct inactivation of the infectious particles.—ALFRED EDEN.

HYGIENE AND PUBLIC HEALTH

MEYN, A. (1941). Die Versorgung Leipzigs mit gesunder Milch. **[The Provision of a Sanitary Milk Supply for Leipzig].**—*Berl. Münch. tierärztl. Wschr.* April 25th. 201–205. **228**

Since 1933 Leipzig has been provided with an improved hygienic milk supply. About 300 herds within a radius of 15 km. send all their milk to Leipzig, where it is handled by three dairy firms, which in times of scarcity can call on ten outlying dairies for additional supplies.

The usual chemical and hygienic control tests are carried out on milk samples, also quarterly veterinary inspection of cows in herds delivering milk graded as raw *Markenmilch* and *Vorzugsmilch* bottled at the farm. The main bulk of ordinary milk was unsatisfactory until in 1933 a *Milchhof* was built in which all such milk is pasteurized, latterly by the short time process.

All kinds of milk are suitably subjected at various stages to control by the veterinary public health service. —O. D. JAMES.

*HANSEN, P. L. (1941). Om Anginaepidemier hidrorende fra Maelk inficerent med humanpatogene Streptokokker (Grupp A-Streptokokker). **[Infectious Sore Throat Outbreaks Originating from Milk Infected with Group A Streptococci Pathogenic for Man].**—*Medlemsbl. danske Dyrlaegeforen.* [Abst. from abst. in *Skand. VetTidskr.* **32.** 294]. **229**

H. annotates some of the reports on milk-borne epidemics of scarlatina and infectious sore throat in man. Streptococci pathogenic for man had either set up a mastitis in the cow from which the milk was drawn or had gained access to the milk after production. The latter is the less common and two examples are reviewed, the source of the infection being a finger lesion and middle ear inflammation respectively in two dairy maids. In the several instances in which cows excreted the organisms in the milk, these were found to be group A streptococci. In most cases the origin of the udder infection was traced to a human being in contact with the cattle and from whom the same type of organism was isolated. One cow, under observation for seven months, excreted group A streptococci consistently. Treatment with sulphanilamide failed. After four intramammary injections of trypaflavine solution no organisms could be found in the milk.—G. B. BROOK.

BOUVIER, G. (1942). Recherche du bacille tuberculeux dans le lait. **[The Examination of Milk for Tubercle Bacilli].**—*Schweiz. Arch. Tierheilk.* **84.** 25–32. [In French]. **230**

The centrifuged deposit from the milk is treated with 15% hydrochloric acid for 5 min., and the deposit is immediately sown on to the medium without preliminary neutralization. The method gives good results with Petragnani's medium, even though the glycerin is omitted.

To avoid lowering the pH of the medium the surplus acid liquid is removed after the medium has been sown. The organisms can generally be detected on the medium within six weeks.—D. L. HUGHES.

TOTZEK, ZUMPE, & LOMMATZSCH. (1940). Ein Beitrag zur Frage der fleischbeschaulichen Beurteilung leukosekranker Schlachtrinder. **[Meat Inspection Judgment on Slaughter Cattle with Leucosis].**—*Z. Fleisch- u. Milchhvg.* **51.** 59–62 and 74–77. **231**

In order to determine whether the existing meat inspection methods suffice to detect cases of leucosis in cattle, the authors examined in great detail all cases which became available at Dresden abattoir during a five-month period. They found 20 cases, one mild, six moderate, and 13 severe, the average age being 8–10 years. Ordinary carcass inspection revealed leucosis in all these cases except in a few where the changes were limited to the musculature inside the shoulder joint. It was judged easy to detect the disease by the usual methods, except in slight cases which may appear normal unless sections of muscle are examined microscopically for the leucocyte infiltration which is the first stage of the disease.

The histological appearance of leucosis of all grades is described.—O. D. JAMES.

See also absts. **132, 133, 135, 136, 262, 263.**

SAUER, B. (1941). Können unzerteilte Tierkörper in neuzeitlichen Apparaten "unschädlich" beseitigt werden? **[Can Undivided Carcasses be Safely Disposed of in Modern (Destructor) Apparatus?]**—*Berl. Münch. tierärztl. Wschr.* Feb. 28th. 104–105. **232**

The disposal of animal carcasses in Germany is regulated by the decree of February 1, 1939, which also

provides for financial as well as hygienic protection of the personnel. Carcasses of animals affected with anthrax, blackleg, rabies, and glanders must be entirely destroyed, dismembering and flaying being strictly prohibited. The existing methods of carcass disposal and utilization, such as the "wet" method of VENULETH & ELLENBERGER, and the "dry" methods of ESCHER & WYSS, of NIESSEN, and various others, are quite inadequate for meeting legal requirements in the case of large animals. The reconstruction of existing disposal plants and the introduction of more adequate technical appliances are obviously indicated. [It appears more practicable to amend the law so as to permit flaying and quartering of all carcasses.—Ed.]—J. H. KENNETH.

TECHNIQUE AND APPARATUS

LIEBMANN, H. (1942). Ersatz des Fleischwassers, des Fleischextraktes, des Peptons und des Kochsalzes durch Hefe-extrakt bei der Herstellung von festen und flüssigen Bakteriennährböden. **[Substitution of Broth, Meat Extract, Peptone, and Common Salt by Yeast Extract in the Preparation of Solid and Fluid Culture Media]**.—*Zbl. Bakt. I.* (*Orig.*). **148.** 406–410. **233**

A yeast extract, extractum faecis siccum, was found to be a cheap, easily available, and satisfactory substitute for meat extract or peptone in solid or fluid media. A solid medium was made by adding 25 g. yeast extract to 30 g. of agar which had been soaked in a litre of water for 24 hours, boiling the mixture, and sterilizing. This medium was quite clear, and other substances could be added as required. The fluid medium when first made was rather brown, but this colour could be removed by filtration through activated charcoal. This type of medium, due to its cheapness, ease of preparation, and its likelihood of keeping well in tropical countries, is recommended by L. for use in military laboratories, etc. —E. COTCHIN.

CICCONI, M. (1942). Reiskleieextrakt als Nährboden für Mikroorganismen. **[Rice Bran Extract as a Culture Medium]**.—*Zbl. Bakt. I.* (*Orig.*). **149.** 61–64. **234**

The medium was made by extracting 1 kg. rice bran with 5 litres of water + 30 ml. conc. HCl for 1–2 days, filtering through cloth, adding NaOH to a pH of 6·5, heating to 80°C., filtering through paper, and neutralizing and sterilizing. Agar was added to make solid medium if desired. Most common organisms grew as readily on this as upon meat extract media; organisms of the brucella group did not grow. Pigmentation of one strain of staphylococcus and of *Pseudomonas aeruginosa* was reduced. Fungi grew better than upon meat extract. Addition of 0·1% peptone was advantageous.—J. G. CARR.

SEELEMANN, M. (1942). Zur Bangbakterienzüchtung. (Bemerkung zu der Arbeit von Kunz: Ein einfaches und billiges Verfahren zur Herstellung einer Kohlensäureatmosphäre für Bakterienzüchtung). **[Cultivation of *Brucella abortus*. Comment on Kunz's Paper]**. —*Zbl. Bakt. I.* (*Orig.*). **148.** 398–399. [See *V. B.* **12.** 316]. **235**

A method is described of generating sufficient CO_2 in jars intended for the culture of *Br. abortus*, by burning a small amount of absolute alcohol in the jar prior to closing it. 6–8 drops of alcohol gave enough CO_2 for a 3 litre jar. S. has found this method reliable. —R. S. DE ROPP.

See also absts. **58, 59.**

SCHUBERT, H. (1942). Quantitative Bakteriologie. I. Mitteilung: Zur Theorie der Zählplatte. **[Quantitative Bacteriology. I. Theory of the Counting Plate]**. —*Zbl. Bakt. I.* (*Orig.*). **148.** 399–405. **236**

S. carried out a practical and mathematical investigation to account for the observed fact that the number of colonies appearing in count plates at successive tenfold dilutions decreased in geometrical and not arithmetical ratios, so that more colonies appeared at the greater dilutions than would have been expected. He concludes that the law of mass action, whereby electrically charged bacteria will be more widely separated in the more dilute suspensions, and thus more likely to give rise to separate colonies, may explain this phenomenon, and that errors due to faulty pipetting, and failure of some colonies to grow in overcrowded plates made from the lesser dilutions, are of less importance.—E. COTCHIN.

POLDING, J. B. (1942). **A Cheap and Accurate Home-Made Automatic Pipette.**—*Indian J. vet. Sci.* **12.** 48–52. **237**

The construction is described of an automatic pipette for the delivery of repeated and constant quantities of antigen, as required for agglutination tests. By a simple interchange of parts it can be made to deliver any quantity from 0·25–10 ml. The original should be consulted for details.—D. MUNRO.

BOYARSKAYA, B. G. (1939). Metodika opredeleniya okislitel'no-vosstanovitel'novo potentsiala v kul'turakh anaerobnykh bakterii. **[Method for Determination of Oxidation-Reduction Potential in Anaerobic Cultures]**.—*Mikrobiologiya, Moscow.* **8.** 142–148. [English summary]. **238**

B. describes a new apparatus for determination of the oxidation-reduction potential in anaerobic cultures and deals also with changes taking place in the oxidation-reduction potential of the medium in the course of cellulose fermentation.—A. MOLDAWSKY.

*ANTIMONELLI, R. (1940). Di un metodo semplice per la colorazione degli organi dei motilità dei protozoi. **[Staining Method for Motile Organs of Protozoa]**.—*Pathologica.* **32.** 44. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **140.** 522]. **239**

A few drops of Lugol's solution are mixed with the material to be tested, and the whole is then spread into a film and the slide is allowed to dry, flooded with absolute alcohol for 15 min., rocked, washed in distilled water, and stained with Ziehl's basic fuchsin or a gentian-carbolic solution, or with eosin or Janus green over a flame until evaporation starts. Janus green will also stain in the cold. This method is claimed to give very sharp differentiation and durable preparations.

FARR, M. M., & LUTTERMOSER, G. W. (1941). **Comparative Efficiency of Zinc Sulfate and Sugar Solutions for the Simultaneous Flotation of Coccidial Oöcysts and Helminth Eggs.**—*J. Parasit.* **27.** 417–424. **240**

The authors tested the comparative efficiency of zinc sulphate and sugar solutions, using a modified direct centrifugal flotation technique, for the simultaneous flotation of sporulated oocysts of *Eimeria* spp. and eggs of *Ascaridia lineata* and *Heterakis gallinae*. Five soils, sandy loam in nature, and five samples of chicken faeces were used. A zinc sulphate solution of sp. gr. 1·200 was more efficient for the centrifugal flotation of oocysts than a sugar solution of sp. gr. 1·270 but the latter was more efficient for the flotation of the helminth eggs. A sugar solution of sp. gr. 1·270 was slightly more efficient than one of sp. gr. 1·200 for the flotation of eggs. Although sugar solution (sp. gr. 1·200) is no more efficient than zinc sulphate

(sp. gr. 1·200), it is more practical for detecting oocysts and eggs of poultry parasites because it is more easily obtained, is less expensive, is a better mounting medium, and, with it, eggs and oocysts are more evenly distributed over the slide. The modified direct centrifugal flotation technique used by the authors recovered 10–88% of the eggs and oocysts inoculated into the soil and faecal samples.—J. N. OLDHAM.

PETERS, B. G. (1941). **Dilution Egg-Counts and the Poisson Series.**—*J. Helminth.* **19.** 59–62. **241**

Analyses of the dilution egg-counts of over 1,500 faecal suspensions show a close agreement between the mean count and the error variance between parallel counts. As this agreement is a feature of the Poisson distribution series, it is assumed that the dilution counts are, in fact, distributed according to the terms of this series, wherever the technique is adequate. Theoretical reasons are advanced to show that even with high egg counts (up to 100 per slide) the distribution of the eggs still conforms to a Poisson series. Some discussion is also devoted to the effect of mixing, personal error, and the size of the counting cell.—ALFRED EDEN.

WHITLOCK, H. V. (1942). **The Preparation and Examination of Faecal Cultures for the Differentiation of Larvae of Sheep Nematodes.**—*J. Coun. sci. industr. Res. Aust.* **15.** 56–58. **242**

Techniques are described for the preparation of larval cultures from sheep faeces and the examination of larvae recovered therefrom. Improvements of the technique formerly used are described, including (a) mechanical mixing of faeces by means of an electric stirrer, using sterile, powdered sheep faeces to dilute the samples being cultured, (b) a trough slide for holding culture washings during microscopical examination for differentiation, and (c) the use of a saturated solution of iodine and KI diluted with an equal quantity of water for killing and staining larvae. The trough slide and the method of washing larvae from cultures are figured.
—H. McL. GORDON.

ALBRECHT, B. (1942). Technisches zur Filtration mit Berkefeld-Kerzen. **[Technical Points on Filtration by Berkefeld Candles].**—*Zbl. Bakt. I.* (*Orig.*). **148.** 318–320. **243**

Descriptions and photographs are given of three easily erected pieces of apparatus. The first is a device for filtering infective material through a series of filter candles, of decreasing pore size, arranged one above the other; the second is a simple device for providing a flow of water, heated to any desired temperature, for cleaning contaminated candles; the third is a means of carrying out filtration at any desired temperature, by fitting a glass water-jacket around the candle and delivery tube.—E. COTCHIN.

*LAMA, A. (1940). Di un pratico procedimento di filtrazione degli ultravirus. **[A Simple Filtration Method for Viruses].**—*Boll. Ist. sieroter. Milano.* **19.** 543–548. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **140.** 340]. **244**

L. describes what he terms a simplified filter for virus work, using artificial parchment. He speaks of dialysing filtered rabies virus and of the advantage of the dialysation in freeing the virus from particulate matter on which it is adsorbed.

LÉPINE, P., & SAUTTER, V. (1941). Conservation des virus par la congélation et par la dessiccation. **[Conservation of Viruses by Freezing and Drying].**—*Ann. Inst. Pasteur.* **67.** 371–373. [Abst. from abst. in *Bull. Inst. Pasteur.* **40.** 179]. **245**

Many viruses can be preserved by simple desiccation at room temperature or by storing in the frozen state. The periods of survival, in days, of dried viruses were as follows:– fixed rabies, 650–1,394; "street" rabies, 997; Aujeszky's disease, 977; ectromelia, 1,295; louping-ill, 1,422; herpes 1,329; American equine encephalomyelitis, 533. The figures for frozen viruses were:– fixed rabies at –4°C., 732, at –20°C., 884; encephalomyelitis at –4°C., 900; lymphocytic choriomeningitis at –4°C., 100–200, at –80°C., 554. These methods are of particular value for delicate viruses which otherwise require frequent passage.—R. E. GLOVER.

ZOTTNER, G. (1942). Contribution au diagnostic bactérioscopique extemporané des infections charbonneuses. **[Rapid Bacterioscopic Diagnosis of Anthrax].**—*Bull. Soc. Path. exot.* **35.** 163–165. **246**

An advisory note for doctors drawing attention to the value for rapid diagnosis of a modification of a method described by STEVENEL and later modified by Z.
—J. E.

PASS, G. (1942). Zur fluoreszenzmikroskopischen Darstellung von Bakterien in Schnittpräparaten. **[Fluorescence-Microscopical Demonstration of Bacteria in Tissue Sections].**—*Zbl. Bakt. I.* (*Orig.*). **149.** 52–56. **247**

The technique of fluorescence demonstration of micro-organisms in formol-fixed paraffin sections is described. For recommendations as to the reagents found satisfactory, the original should be consulted.
—J. G. CARR.

See also abst. **88.**

HERBERT, D. (1941). **A Simple Colorimetric Method for the Estimation of Haemolysis and its Application to the Study of Streptolysin.**—*Biochem. J.* **35.** 1116–1123. **248**

The haemolytic activity of a solution of streptolysin O was measured by incubating decreasing volumes with a standard amount of red cell suspension for 30 min. at 38°C. and estimating the amounts of haemoglobin in the supernatant after certifuging, by means of a Leitz colorimeter, employing the No. 7 green filter in the eyepiece and matching with Ilford neutral grey filters of densities 1·0 and 1·5. The haemolytic tests were made in a mixture of equal volumes of 0·9% saline and a phosphate buffer of pH 6·5; the red cell suspensions used were accurately standardized by colorimetric estimation of their haemoglobin content. Four graphs and two tables are given of the haemolytic activities of streptolysin O preparations.—R. O. MUIR.

MÜNDEL, O., & KUHN, H. (1941). Ein selbsttätiger biologischer Test für die Prüfung von Autoklaven. **[A Biological Test for Autoclaves].**—*Zbl. Bakt. I.* (*Orig.*). **147.** 233–235. **249**

So that test spore-bearing organisms could be implanted into culture medium during the test-run of an autoclave, an apparatus was devised, consisting of a conical flask with an obliquely set side-tube arising at the base of the neck; the culture medium lies at the bottom of this flask, while the test organisms are held in the side-tube by an agar plug, which melts during the test, thus inoculating the culture medium. This effectively prevents contamination by outside organisms after the test. The conical flask is transferred to the incubator directly after removal from the autoclave.
—E. COTCHIN.

SPOONER, E. T. C., & TURNBULL, L. H. (1942). **Notes on the Use of Autoclaves: with Special Reference to the Sterilization of Blood Transfusion Apparatus.**—*Bull. War Med.* **2.** 345–349. **250**

A general description is given of autoclaves and of the principles involved in sterilization. Special considerations affecting the use of autoclaves in blood

supply depots are mentioned in detail. A pressure of 15 lb. per sq. in. is generally adequate to kill all spores, provided that air removal is adequate and that steam gains access to the spores. Such a pressure allows for little or no margin of safety and a pressure of 20 lb. for 20 min. is recommended, after a vigorous blow-off of contained air for 20 min. has been allowed. Four tests of efficiency are suggested, and their limitations are discussed. The recommended and most stringent test is that of garden soil containing heat-resistant spores; proof of adequate sterilization is assumed if there is no growth on broth medium when the soil is added. For blood transfusion work it is important to kill all bacteria, nonpathogens as well as pathogens. The garden soil test is preferable when tests are being made of autoclaves for blood transfusion work.—ALFRED EDEN.

KUDRYAVTSEV, A. A. (1941). Opredelenie krovyanogo davleniya u loshadei. [**Determining the Blood Pressure of Horses**].—*Veterinariya, Moscow.* No. 3. pp. 117–118. [French summary]. **251**

Description of a sphygmomanometer which was applied to the base of the tail.—E. R. PARISER.

*BENKÖ, S. (1940). [**The Diazo Reaction for Bilirubin in the Blood of Some Domestic Mammals**].—*Közl. Összehas. élet- és kórtan Köréből.* **29.** 111–112. [In Hungarian]. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 326]. **252**

Van den Bergh's test was applied to samples of normal blood serum and blood plasma from 30 horses, 30 pigs, 20 bovines, and 10 dogs. Normal horse blood alone gave a positive reaction, the serum containing more bilirubin than the plasma. The test revealed the presence of bile pigment in the sera of six pigs with slight icterus.

When bilirubin was added to the sera of horses or pigs only a part of the added amount could be detected by application of the test. B. suggests that the residual amount may have been adsorbed to the serum globulins. —M. LANDAU.

See also abst. **82.**

MISCELLANEOUS

SCHÄLE, E. (1942). Der Strauss als Wirtschaftstier. [**The Ostrich as an Economic Animal**].—*Z. Tierz. ZüchtBiol.* **52.** 263–279. **253**

A general article on the ostrich and its domestication with special reference to South African experience. The chief diseases under farming conditions are briefly described. They include paralysis of the feet, which affects young birds and may be infectious, helminthiasis (*Taenia struthionis*, *Strongylus douglasi*), yellow liver disease of unknown causation, and poisoning by various plants, the most common of which are wild tobacco, *Datura* spp., *Opuntia tuna*, and *Nerium oleander*.—J. E.

BERT, F. (1942). Das Staatl.Veterinär-Untersuchungsamt in Giessen und das Institut für tierärztliche Nahrungsmittelkunde der Ludwigs-Universität. [**The State Veterinary Investigation Office at Giessen and the Institute for Veterinary Nutritional Science of Ludwig's University, Giessen**].—*Tierärztl. Rdsch.* **48.** 105–106. **254**

The institute for veterinary nutritional science of the University of Giessen and the veterinary-investigation office of Hessen are jointly housed in a building erected during 1929–1931 and are both directed by Professor STANDFUSS. The institute deals with the investigation of food from animal sources, including the bacteriological examination of meat, and with the training of students, and the office with routine bacteriological testing of milk (approximately 120,000 samples per annum), herd-testing supervision, and the preparation of sera and vaccines, particularly swine erysipelas and foot and mouth disease sera. In addition, the office is responsible for the inspection of meat imported into the town of Giessen.—J. H. KENNETH.

HARRIS, L. E. (1942). **The New Federal Food, Drug, and Cosmetic Act and its Relation to the Veterinarian.** —*J. Amer. vet. med. Ass.* **100.** 202–204. **255**

For the first time in an Act of this kind, the persons qualified to prescribe drugs are mentioned specifically, *viz*, the physician, dentist, and veterinarian. Section 503 is of importance to the veterinarian. It exempts a drug dispensed or prescribed by him from label requirements of statement of name and address of manufacturer, weight, measure or numerical count, name of the drug, and statement of active ingredients. The drug must, however, bear a label showing the name and address of the dispenser, a serial number identifying the drug, the date, and the name of the veterinarian. If drugs are dispensed without prior examination of the patient, the drug must bear a label complying with all regulations of the Act. It is understood that the following drugs are regarded as dangerous and should be used only under expert advice :– aconite, aspidium, carbon tetrachloride, chenopodium oil, digitalis, santonin, sulphapyridine, tetrachlorethylene, thiocyanates, and thyroid. —H. V. HUGHES.

I. —. (1942). **Procurement and Assignment Service for Physicians, Dentists and Veterinarians.**—*J. Amer. vet. med. Ass.* **100.** 280–300. **256**

II. —. (1942). **State Veterinary Preparedness Committees.**—*Ibid.* 383–385. **257**

I & II. All male veterinary surgeons under 45 in the U.S.A. are liable for military service. The Procurement and Assignment Service established in October, 1941, with a view to co-ordinating the demands made upon the medical, dental, and veterinary personnel of the nation has co-operated with the National Roster of Scientific and Specialized Personnel in preparing a questionnaire for circulation to members of these professions. With the questionnaire is an enrolment form whereby the individual may voluntarily offer his services, indicating his preference for military, governmental, industrial, or civil work. On registration, he will receive a certificate indicating that he has offered his services. When a request for veterinary personnel is made by a Federal agency, the names of those available are considered by one of the nine Corps Area Committees. Each of these includes a veterinary representative and is advised by a state veterinary committee. This committee consists of a chairman, nominated by the state veterinary association, and a number of members appointed with the advice and approval of the association. The central office is then informed of those who are qualified and available, and appointments are made accordingly.—H. V. HUGHES.

MACKENZIE, M. D. (1942). **Medical Relief in Europe. Questions for Immediate Study.** pp. 67. London: The Royal Institute of International Affairs. [8vo]. **258**

An outline of the probable situation of disease and malnutrition in post-war Europe, with plans for prompt and effective medical relief. The re-establishment of the proper nutrition of a population ultimately depends upon agricultural reconstruction, including the early initiation of ploughing by means of imported tractors or horses, and the provision of seed, livestock, poultry, and winter fodder for the animals. In large areas of

Europe, where tractors are not available, horses are essential. During hostilities, horses will have been commandeered by the military authorities, killed for food in some countries, or preyed upon by wolves. The position will be similar with regard to cattle, but this loss is not as desperate as that of horses. Horses are also essential for transport under normal conditions; for the distribution of relief supplies, horses may be the only means of transport over large areas where bad roads and winter conditions prevail. The re-establishment of the milk supply is linked with agricultural and economic reconstruction, including the importation of cows, oil-seed cake, and winter fodder.

Attention is drawn, in this connexion, to the value of veterinary advice and to the importance of veterinary services in preventing the spread of infections during the movements of livestock.

An increase in the incidence of rabies is expected because of the absence, during hostilities, of deliberate destruction of wolves and foxes.

CESTRILLI, V. (1940). I veterinari in Italia. **[Veterinarians in Italy].**—*Azione vet.* **9.** 181–202. 259

The number of veterinarians in Italy in 1939 was 4,099; of these, 2,023 were situated in northern Italy, 892 in central Italy, 776 in southern Italy, and 408 in the islands. 2,912 were district veterinarians, 901 in private practice, and the rest variously occupied in ways not detailed.

GERLACH. (1942). Neue Anregungen zur gleichzeitigen Seuchentilgung und Höherzüchtung beim Rindvieh. **[New Suggestions for Simultaneous Disease Control and Breeding Improvement in Cattle].**—*Berl. Münch. tierärztl. Wschr.* May 1st. 133–136. 260

G. proposes that a large area, 2–3,000 sq. kilometres, should be set aside by the State for the creation of a national reservoir of disease-free stock which would there be built up. From this pool farmers could draw for the replacement of animals culled from their herds. The drawbacks of such a scheme are discussed.—M. L.

I. —. (1941). Luftschutzmerkblatt für Tierhalter, Ausgabe 1940, und Tierluftschutzkasten 39. **[Germany: A.R.P. Notice for Animal Owners, 1940 Edition, and A.R.P. First Aid Box 39].**—*Dtsch. tierärztl. Wschr.* 49. 103. **261**

II. —. (1942). Deutsches Reich. Runderlass des Reichministers des Innern, betr. Verfahren mit kampfstoffvergifteten Schlachttieren, Fleisch und Fleischwaren; hier: Luftschutz-Veterin rdienst II. und III. Ordnung. Vom 16. Januar 1942. **[Germany: Circular on Procedure for Dealing with Slaughter Animals, Meat, and Meat Products Contaminated with Poison Gas].**—*Reichsgesundheitsblatt.* **17.** 297–298. 262

III. —. (1942). Deutsches Reich. Runderlass des Reichsministers des Innern, betr. Verfahren mit Tieren, Lebens- und Futtermitteln nach Einwirkung phosphorhaltiger Brandstiftungsmittel. Vom 31. Juli 1942. **[Germany: Circular on Procedure in Presence of Phosphorus-Containing Fire Bombs. Care of Animals and Foodstuffs].**—*Ibid.* 694. 263

I. A short review of a new edition of an A.R.P. booklet for animal owners.

II. This circular deals with protective and decontaminative action against poison gas affecting slaughter animals, meat, and meat products. It nominates the responsible authorities, outlines the action to be taken and specifies the equipment which must be kept ready.

III. This circular sets out the procedure for dealing with phosphorus-containing fire bombs, in relation to their action on animals, foodstuffs, and fodder. The interested authorities are nominated and the duties of veterinary and chemical experts outlined. Action to be taken to protect farm animals from phosphorus poisoning on farm land, farmyards, etc., is prescribed and ways to deal with bomb fragments, because of phosphorus contamination, and to decontaminate ground, buildings, etc., are set out. Advice is given on veterinary aid and on chemical analytical work. Meat inspection of animals poisoned by phosphorus is done according to the Meat Inspection Law. It is, however, added that the internal organs and the udder must always, and the head and tongue sometimes (according to severity of poisoning) be declared unwholesome.—J. E.

GOWAR, F. J. S., & GILMOUR, J. R. (1941). **Changes in the Lung Following Injections of Iodized Oil into the Trachea.**—*Brit. J. exp. Path.* **22.** 262–273. 264

Rabbits given a single injection of iodized oil (neohydriol) into the trachea, as used to produce radio-opacity, were killed for P.M. examination of the lungs at varying intervals. It was found that collapse of the lung could not be attributed to the oil, and that the only definite result of the injection was the formation of nodules of epithelioid cells in the alveolar walls, a minority of which contained oily globules. The non-viscous form of neohydriol produced fewer epithelioid cells than the viscous form. In all rabbits killed by a blow upon the neck, but not in those killed by nembutal, emboli were present in the lungs. The authors suggest that, if the introduction of iodized oil into the air passages does predispose to massive collapse of the lung, it is by bronchial obstruction by mechanical action of the oil rather than by the production of histological changes.—N. J. SCORGIE.

DALE, H. H. (1942). **Wartime Arrangements for International Biological Standards and the New Standard for Pituitary (Posterior Lobe) Preparations.**—*Brit. med. J.* Oct. 3rd. 385–387. 265

Complete sets of all international standards (or, in a few cases, their exact equivalents) have been deposited with institutions having the requisite facilities for ideal storage in countries widely distant from one another. With these are deposited full technical records of the methods of preparing and using them. When the supply of international serum standards from Copenhagen to many other countries became doubtful, the identical or exactly equivalent British serum standards were made available.

The standard preparation of pituitary posterior lobe was becoming exhausted in 1939 and had thus to be renewed. A further quantity of the acetone-extracted and dried powder was obtained and desiccated under standard conditions. This, tested in 13 different laboratories, was found to be some 12% more active, per unit of weight, than the old standard. Reasons are given for adopting the activity of 0·5 mg. of the new powder as the standard unit of pituitary posterior lobe.
—J. M. ROBSON.

PICKLES, W. N. (1942). **Epidemic Disease in English Village Life in Peace and War.** pp. 11. 4 charts. Aysgarth, Yorks: The Author. [4to]. 266

P. published his book on epidemiology in country medical practice in 1939 and his interesting observations on the spread of infective disease in a small, widely scattered community in hilly country with limited communications attracted a lot of attention. He has extended his observations in the Milroy Lectures which he delivered this year and they are now published in an abridged form. Although the diseases dealt with are not those which concern veterinary readers, the principles which condition their existence are comparable and many will find perusal of these lectures interesting. P. has shown what an individual observer can achieve in the study of the rich clinical material available to a practitioner.

REPORTS

I. GREAT BRITAIN. (1940). **Alan, Duke of Northumberland Memorial Fund. Sixth Report of the Management Committee. Research Work into Sheep and Lamb Diseases, 1940.** [STEWART, W. L.] pp. 40. Newcastle upon Tyne: King's College. [8vo]. **267**

II. GREAT BRITAIN. (1941). **Alan, Duke of Northumberland Memorial Fund. Seventh Report of the Management Committee. Research Work into Sheep and Lamb Diseases with a Report on Grass Sickness in Horses, 1941.** [STEWART, W. L.] pp. 32. Newcastle upon Tyne: King's College. [8vo]. **268**

III. GREAT BRITAIN. (1942). **Alan, Duke of Northumberland Memorial Fund. Eighth Report of the Management Committee. Research Work into Sheep and Lamb Diseases with a Report on Grass Sickness in Horses, 1942.** [STEWART, W. L.] pp. 31. Newcastle upon Tyne: King's College. [8vo]. **269**

These reports contain instructions and information about the various biological products which are available to sheep farmers, up-to-date information on lamb dysentery, pulpy kidney disease, braxy, louping-ill, contagious pustular dermatitis and "swayback", and reports on research carried out during their respective years.

I. Details are given of experiments carried out on flocks in the northern counties of England, with the object of controlling sheep ticks. The death rate of lambs in May and June on tick-infested farms averaged 10–20% of the entire crop, the majority of deaths being due to septic infections following tick bites. Dusting with powdered derris root proved better than dipping in keeping ewes tick-free, and was also effective in preventing tick infestation in young lambs.

In a study of "BORDER PINING", five groups of sheep were enclosed, each on its own grazing land, for a three-year period. One group was given cake and minerals, another worm treatment, and a third both together, whilst the fourth and fifth groups received no special treatment and the fourth group had a change of pasture. Preliminary results are given. Research was also begun on PREGNANCY DISEASE of ewes, of which there appeared to be two kinds.

II. Further work on TICK INFESTATION indicated that rank, rough vegetation on hill grazings favours tick survival. To control tick infestation in sheep it is now advised that adults be dipped and young lambs given dustings with derris powder. A survey of two flocks of sheep supplied data on the relative importance of PULPY KIDNEY DISEASE and TICK PYAEMIA. The latter accounted for 17% of mortality and a further 14% dying of other causes had also tick pyaemia.

Work on "BORDER PINING" demonstrated the value of food supplements plus anthelmintic treatment. The former alone were also very beneficial and more so than the latter alone, the effects of which were hardly noticeable. Work on PREGNANCY DISEASE differentiated two types, "moss staggers" in hill ewes and "twin-lamb disease" in lowland ewes, the latter being associated with acetonuria and the former with hypocalcaemia. Therapeutic suggestions are made. Nineteen cases of "GRASS SICKNESS" in horses in the Penrith area were investigated: the main features of the disease are described. An attempt to find an infective agent in the brains of two cases failed.

III. Further advice is given on the control of sheep ticks, by derris powder for lambs and by derris-arsenic-wool-grease dip for sheep. Further work on "BORDER PINING" was directed upon the problem of finding which constituent in the beneficial mineral mixture is the essential one, experiments being conducted with copper, iron, and cobalt with and without concomitant phenothiazine dosing. No clear-cut results were obtained, as judged from the live weight, worm-egg count, and blood picture. Experiments on cattle demonstrated the value of phenothiazine, as judged by weight gains, but copper-nicotine mixture gave poor results. Notes are given on "GRASS SICKNESS" in Cumberland. An experiment to determine the value of a special "supplementary mixture" in the prevention of the disease was begun on 350 horses and 350 controls.

—H. V. HUGHES.

COLONY AND PROTECTORATE OF KENYA. (1939). **Veterinary Department Abridged Annual Report [1939].** [DAUBNEY, R.] pp. 6. [fcp] [Mimeographed]. **270**

GENERAL.—The year was unusually dry and there was serious shortage of grazing in the northern areas, where, in addition to the drought, locusts were also troublesome. Messrs. Liebig's factory opened in July and received 4,258 cattle from settled areas, 3,709 from native reserves, and 3,846 from Tanganyika. 90,000 doses of desiccated attenuated RINDERPEST virus were supplied for the anti-rinderpest campaign in Tanganyika. In Kenya 21,646 doses of goat-passaged virus were used during the year; mortality in controlled inoculations of uninfected herds was about 0·66%, but the virus was not entirely suitable for calves since only about 60% of calves reacted and there was a high mortality amongst those which did react. Experimental work on attenuation was continued; three other strains were being passaged as well as the original strain.

The Standing Veterinary Research Committee met in February and approved a programme of research for the Central Veterinary Research Institute. This programme had to be modified on the outbreak of war.

DISEASE CONTROL.—(1) *Settled areas.* There were 60 recorded outbreaks of ANTHRAX and a fairly high incidence of BLACKLEG. Sixty-seven outbreaks of EAST COAST FEVER (many were single cases only) occurred in gazetted clean areas. The Cattle Cleansing Ordinance operated in the Thomson's Falls area. A severe outbreak of RINDERPEST affected 1,300 head of cattle in the Naivasha area. Mortality was 209 head. No outbreaks of BOVINE CONTAGIOUS PLEURO-PNEUMONIA occurred and no case of RABIES was reported. The incidence of FOOT AND MOUTH DISEASE was lighter, only 41 outbreaks being recorded. Fourteen cases of HORSE SICKNESS occurred in the Nanyuki district; apart from these, reported cases were few. Two outbreaks of EAST AFRICAN SWINE FEVER were reported in the Nanyuki district, and in one instance the entire herd of 72 pigs died.

(2) *Native reserves.* Mortality from BLACKLEG continued to be fairly heavy, but the practice of annual vaccination is rapidly gaining ground. Isolated cases of ANTHRAX occurred. The position regarding EAST COAST FEVER remained unchanged though natives in more progressive areas are showing interest in the possibilities of control by dipping. In the control of TRYPANOSOMIASIS some progress has been made with bush-clearing and other measures following tsetse-fly surveys, and large numbers of cattle were treated with tartar emetic. RINDERPEST was fairly prevalent, 123,000 immunizations being carried out. Over 152,000 cattle were vaccinated in the control of outbreaks of BOVINE CONTAGIOUS PLEURO-PNEUMONIA. Outbreaks of FOOT AND MOUTH DISEASE in Central and

South Kavirondo interfered with RINDERPEST immunization. Two areas remained in quarantine for RABIES.

RESEARCH.—Demand for sera and vaccines had been very heavy. Further work had been done on the attenuation of RINDERPEST virus and on methods of titration, desiccation, and storage of this product. All rinderpest virus is now issued in desiccated form, field stations being supplied with refrigerators for storage. Experiments showed that vaccination of cattle with goat-passaged virus gave some protection in 48 hours and, in most cases, adequate protection by 72 hours (*i.e.* long before any active immunity can have been evoked).

Two outbreaks of JOHNE'S DISEASE were found in settled areas. Infection was successfully established in g. pigs by Mohler's method when large numbers of bacteria were present in the inoculum.

An unusually mild form of EAST COAST FEVER was investigated in the Gilgil area. Though mortality in young calves was heavy, adult high-grade stock appeared to be immune. Koch's bodies were found in smears from lymph nodes and spleen of a dead eland, but attempts to infect a young eland with E.C.F. have not been successful. Circumstantial evidence connected the finding of Koch's bodies in sick eland and buffalo with outbreaks of E.C.F. on previously uninfected farms. The survival of infection in *Rhipicephalus appendiculatus* was also studied. Satisfactory progress was made in research on the action of dips on ticks of economic importance.

A number of strains of *Trypanosoma congolense* have been investigated. Experimental work on the control of *Glossina pallidipes* in the Lambwe valley was suspended on the outbreak of war.

Experimental reproduction of BOVINE CONTAGIOUS PLEURO-PNEUMONIA by the method of TURNER & CAMPBELL was confirmed. Among vaccines for this disease that were tested were a saponin preparation and vaccines in fatty excipients. M & B 693 has proved of value in the treatment of early cases.

Work on BOVINE MALIGNANT CATARRH was continued and failed to show any connexion between sheep and the infection of bovines.

The aetiology of MASTITIS was investigated, the typing of salmonella strains, the economic importance of an unnamed *Plasmodium* in turkeys, the value of cobalt in "Nakuruitis", and the treatment of arsenical POISONING in cattle.

ANIMAL HUSBANDRY.—The organization of agricultural production in wartime was undertaken by a "Settlement and Production Board" of which the Director of the veterinary department was a member. The possibilities in the utilization of the animal industry of the Colony for war purposes are discussed.

The dairy industry in native areas suffered from drought conditions. Bulls of the Indian Sahiwal breed of high-yielding strains have been introduced for experimental purposes into the department's native herds.

Experimental shipments of frozen pork and green bacon were made to the United Kingdom. Hides and skins exported during the year amounted in value to £155,868.

At the experimental station at Naivasha, experiments on the feeding of porkers and baconers were carried out. Observations were continued on the periodicity and duration of oestrus in grade and native cattle and sheep. The reproductive capacity of rams has been studied as well as the artificial induction of oestrus in the ewe and cow by hormone injections. Work on artificial insemination of cattle and sheep has been extended.

The report concludes with notes on marketing, legislation, and statistics of disease outbreaks and of exports of stock and stock products.—H. E. HARBOUR.

COLONY AND PROTECTORATE OF KENYA. (1941). **Veterinary Department Annual Report 1940 (Abridged)** [DAUBNEY, R.] pp. 7. Nairobi: Govt. Printer. [8vo]. **271**

GENERAL.—The first section of this abridged report deals mainly with developments in the livestock industry following the start of military operations in East Africa. One of the chief difficulties was the provision of adequate cold storage, but this was being overcome. Control of supplies of fresh meat, bacon, and dairy produce was set up and working smoothly. Constant movements of large herds of slaughter stock purchased in native reserves had been accomplished without serious loss or the dissemination of contagious or tick-borne diseases. "MEASLES" in beef caused concern and 24·8% of carcasses were condemned. To save undue waste of the country's livestock resources it was decided to sterilize lightly measled carcasses by freezing and holding for 14 days at −10°C.; a freezing plant was to be installed.

Cattle imported on the hoof from Tanganyika for Messrs. Liebig's factory had suffered severe losses from EAST COAST FEVER during the rains and much loss of condition during the dry season. A change of route controlled losses from E.C.F. and steps were being taken to improve water supplies on the stock route. Late in the year the department formed a Forward Supply Unit and slaughter stock were supplied on the hoof to military units.

697,750 doses of desiccated attenuated RINDERPEST virus were supplied for the campaign against the disease in Southern Tanganyika and remarkably good results were achieved.

Twenty-six members of the staff of 69 were released for military service and some services had to be curtailed.

DISEASE CONTROL.

(i) *Settled areas.*—One case of TUBERCULOSIS was seen in an imported bull and one in an in-contact. Seventy-four outbreaks of BLACKLEG and 38 of ANTHRAX were recorded. Sixty-four outbreaks of EAST COAST FEVER occurred in the "clean" areas. RINDERPEST in game was common and 58 outbreaks occurred in cattle. 52,660 cattle were immunized with attenuated virus; this method is gradually replacing the older serum-virus inoculation. No outbreak of BOVINE CONTAGIOUS PLEURO-PNEUMONIA was reported. One case of RABIES was recorded and 18 outbreaks of FOOT AND MOUTH DISEASE occurred. There were 14 fatal cases of HORSE SICKNESS (some in vaccinated animals). Four outbreaks of EAST AFRICAN SWINE FEVER occurred.

(ii) *Native reserves.*—Heavy mortality from BLACKLEG was recorded; 45,384 cattle were vaccinated in the Masai reserve. No change was reported in the situation regarding ANTHRAX, EAST COAST FEVER or TRYPANOSOMIASIS; in the Central Kavirondo, *Glossina palpalis* appeared to be the chief vector of animal trypanosomiasis (*T. vivax*). 117,939 cattle were immunized against RINDERPEST, 81,575 of them by the attenuated virus method. Three outbreaks of BOVINE CONTAGIOUS PLEURO-PNEUMONIA continued and one of them assumed alarming proportions. Mild outbreaks of FOOT AND MOUTH DISEASE occurred. There was an increase in recorded cases of RABIES in dogs, cattle, and human beings in South Kavirondo. Poison baiting was carried out.

RESEARCH.—An avirulent antigenic strain of *Bacillus anthracis* produced by cultivation in 25–30% CO_2 was tested and used in routine vaccine production with satisfactory results.

In two observed outbreaks of TRYPANOSOMIASIS in pigs, *T. simiae* was detected in one case, while in the other, of more chronic type, *T. congolense* was involved. Tests with 4 : 4′-diamidino stilbene and 4 : 4′-diamidino diphenoxypentane against *T. congolense* showed that both could produce a state of premunition although neither was capable of sterilizing the bloodstream of infected cattle.

Production of the more important vaccines was maintained, but demands for RINDERPEST anti-serum fell owing to the increased use of goat-attenuated virus. Four strains of this virus were maintained and experiment showed that the original Kabete strain is still the most satisfactory for field use. Other experiments confirmed that even a small dose of serum may block out the reaction to attenuated virus ; 20% of a group of 1,030 animals failed to react to serum + virus inoculation and remained susceptible. A freshly isolated virus was passaged in goats by intranasal inoculation, but the method did not produce any increase in pneumotropic properties.

Preliminary experiments showed that the virus of HEARTWATER persisted for 14 days in field rats of the species *Rhabdomys pumilio* and in albino rats kept on a vitamin B_2 deficient diet.

Studies on MALIGNANT CATARRH, EAST COAST FEVER, TURNING SICKNESS, and BOVINE CONTAGIOUS PLEURO-PNEUMONIA were continued.

The first recorded outbreak of FOWL CHOLERA in Kenya was investigated ; the outbreak spread from wild geese to domestic poultry.

ANIMAL HUSBANDRY.—Work on artificial insemination included studies of the pH of semen with reference to sperm fertility and semen storage.

The report concludes with statistics relating to marketing, disease outbreaks, stock exports, and production.—H. E. HARBOUR.

TUNISIA. (1941). Fonctionnement des services de l'Institut Pasteur pendant l'année 1940. **[Report of the Work of the Pasteur Institute, Tunis, in 1940].** —*Ann. Inst. Pasteur Tunis.* **30.** 302–331. **272**

This report includes a record of veterinary work under Dr. L. BALOZET. The table on diagnostic examinations includes 64 items of material from animal sources. Veterinary biological products issued are listed : they were used principally against ANTHRAX, SHEEP POX, and BLACKLEG.

An account is given of the antirabic service. During the year 335 dogs were given initial doses of vaccine and 103 " repeat " doses and nine horses, 11 cattle, and three dogs were vaccinated for curative purposes after infection. Since the beginning of the work in 1931, 3,612 dogs have been vaccinated against RABIES and none of them has since died of rabies. Among 102 herbivorous animals vaccinated after infection, only five died of rabies.—J. E.

U.S.A. (1941). **[Report of] Veterinary Division [U.S. Army, 1941].**—*Rep. Surg. Gen. U.S. Army, 1941.* pp. 190–243. **273**

At the end of the fiscal year in June, 1941, the personnel consisted of 598 officers and 1,387 enlisted men. Ten new veterinary station hospitals are included in the hospital construction accomplished during the year. Rejection by veterinary officers of food products for human consumption, supplied by contractors and not up to the necessary standard, produced an estimated saving of 989,782 dollars.

The average animal strength of the army increased from 23,432 in 1939 to 25,175 in 1940. All horses and mules of the Regular Army, National Guard, and Reserve Officers' Training Corps were vaccinated against EQUINE ENCEPHALOMYELITIS, and although 17,000 cases of the disease occurred in various parts of the country, no cases appeared among the vaccinated animals of the Army. An outbreak of SURRA in the Philippines was eradicated.—H. V. HUGHES.

BOOK REVIEWS

WEBSTER, L. T. [M.D., The Rockefeller Institute for Medical Research, New York]. (1942). **Rabies.** pp. vi+168. 8 figs., 6 appendixes. New York : The Macmillan Company. [8vo] [$1.75]. **274**

This book is a timely summing up of scientific facts about rabies, as it appears at a time when it has not been found possible, in attempts to assess the value of vaccines, to provide statistical evidence that the classical methods really provide protection. Investigations on the immunization of dogs have shown that short-course vaccination rarely confers a serviceable protection.

The author develops his theme around two headings, diagnosis and control, believing that such an arrangement will be most enlightening to the layman, but in actual fact he covers much general ground. He does not, however, deal with the vaccination of dogs for the control of the disease, although he does deal with experimental immunization of dogs. A leading feature of the work is the " mouse test ", developed by the author in the Rockefeller Institute of Medical Research. With its aid, diagnosis has been improved and the evaluation of vaccines made possible.

Much space is given to a critical assay of the immunizing value of vaccines. It appears that the whole problem is in the melting pot and requires a new effort in research. There is very little reliable evidence that vaccines used up to the present have any appreciable immunizing value.

Although the author claims to write partly for the layman, the matter is set out normally as for a scientific technical treatise, rendering it difficult for the layman to benefit from his reading. It seems, therefore, that a good account of the problem in simple language is still required for the instruction of the general public, to make clear why rather irksome control measures must be submitted to. Reports from the U.S.A. continually make clear the fact that popular opposition to control measures and failure to enforce existing enactments play the leading part in the failure to eradicate rabies in that country.

All veterinarians concerned in any way with rabies should obtain this book.—J. E.

BEADNELL, C. M. [C.B., F.Z.S.]. (1942). **Dictionary of Scientific Terms as Used in the Various Sciences.** pp. x+232+13. London : Watts & Co. [8vo] [2s.] **275**

This is a handy dictionary of biological, physical, and chemical terms, which should prove to be useful to veterinary writers and readers. Definitions are given in very concise form. A few are not as illuminating as they might be, *e.g.* " fibula—the outer clasping bone of the leg ". A supplement gives much useful information on words used in astronomy and physics, including wave-length tables.—J. E.

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